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ACUTE ASEPTIC MENINGITIS: A REVIEW

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Experience at the Addington Children's Hospital, Durban, over the last 5 years has made it clear that many cases of the aseptic meningitis syndrome are being misdiagnosed or missed entirely. The latter error is not necessarily a serious one, and may indeed have much to commend it, for it saves the patient and his family not inconsiderable discomfort, worry and expense for an illness which is entirely benign and self-limiting! Confusion with more serious disease, however, is of considerable importance, all the more so because it is so easy. In view of the frequency of the condition, the occasional difficulties in diagnosis, and the light shed during recent years on its aetiology, it appears worth while focussing some attention on this subject and reviewing the present position. Some illustrative case-histories are presented but no analysis of case-material attempted; this will form the subject of a subsequent communication.

Definition. The term aseptic meningitis is a clinical one applying to any condition of meningeal irritation, with cellular response in the CSF and bacteriological sterility. It is evident that such a syndrome may be produced by a wide variety of agents, infective and non-infective, and that, defined as such, the condition would include such serious diseases as poliomyelitis, tuberculous meningitis, malignant meningeal infiltrations, etc. For the sake of completeness, and because in their early stages at least such diseases may readily simulate the clinical picture of aseptic meningitis, these are included in the section dealing with aetiology. Our main interest, however, attaches to the benign forms of the condition, and to limit discussion to these types we must include in the definition two further features—a benign course and full recovery without sequelae. It is with this more restricted concept of the aseptic meningitis syndrome that this paper deals.

History. There appears to be no description of aseptic meningitis earlier than 1907.[1] The first epidemic recorded was in Paris during the years 1910—13, but as this followed an epidemic of poliomyelitis it was largely interpreted as being due to that disease.[2] The second epidemic reported occurred in Sweden in 1922—24, and it was during this time that Wallgren, on the basis of his experience of 6 cases, first postulated that this was a new disease entity.[3] Since that time, and particularly since viral research facilities have become more generally available, thus enabling the aetiology to be established in a high proportion of cases, our concept of the condition has changed, so that today it can hardly be said to exist as an entity at all. It is simply a symptom-complex that happens to be common to several specific diseases.

Aetiology

The following table summarizes the known conditions which may give rise to the clinical picture of aseptic meningitis. It is compounded from that of Bayer and Gear,[4] and that of Steigman[5] modified by Anglin.[6] Full acknowledgement is made to these authors.

A. Physical trauma—including the encephalitis of pertussis
B. Chemical irritation:
   I. Systemic—lead, arsenic
   II. Local—intrathecal injection of air, antibiotics, sera, radio-opaque contrast media
C. Metabolic—porphyria
D. Allergic—serum sickness, ? other allergies, auto-immunization following administration of rabies vaccine, pertussis vaccine
E. Reactive, to neighbouring pathology—sinusitis, mastoiditis, abscess, thrombosis, haematoma, neoplasia
F. Post-infectious—measles, rubella, varicella, mumps, vaccinia, variola
G. Infectious:
   I. Helminthic—trichinosis, cysticercosis, multiceps
   II. Protozoal—malaria, toxoplasmosis
   III. Spirochaetal—syphilis, leptospirosis
   IV. Fungal—torula
   V. Bacterial:
      1. Early septic meningitis
      2. Septic meningitis modified by chemo- or antibiotic therapy
      3. Tuberculous meningitis
   VI. Rickettsial
   VII. Viral:
      1. Established viral origin, transmitted:
         (*a*) Man to man:
         Encephalitis lethargica, poliomyelitis, mumps, herpes simplex, herpes zoster, Coxsackie A, Coxsackie B, atypical pneumonia, infectious hepatitis, ECHO viruses types 2, 3, 4, 5, 6, 7, 9, 14 and 16 (especially types 4, 6, 9)
         (*b*) Dog (and other animals) to man: Rabies
         (*c*) Rodent to man: Lymphocytic choriomeningitis.
         (*d*) Arthropod to man: Mosquito—St. Louis, Japanese B., equine group of encephalitides, West Nile fever
         Tick—louping ill, Russian spring-summer encephalitis
      2. Presumed viral origin: Infectious mononucleosis, infectious lymphocytosis, cat-scratch disease.

Seasonal Incidence. The vast majority of cases occur during the summer months, frequently in localized epidemics. Our cases in Durban have been largely confined to the months from October to March.

Clinical Features

A typical case presents with fairly acute onset—headache, usually frontal and retro-orbital, fever, up to 104°F, drowsiness and irritability, nausea and vomiting, and varying degrees of neck and back stiffness. Some cases give a history of sore throat, general muscular pains, abdominal pains, constipation or diarrhoea, conjunctivitis and photophobia. Convulsions are rare, occurring in only 2 of our 76 cases. At times a biphasic illness, such as occurs not infrequently in poliomyelitis, is observed. Lymphadenopathy and a rubelliform rash are features associated particularly with infection by

ECHO virus type 9. Jaundice has been reported,[7] and a peculiar enanthem consisting of whitish-grey dots opposite the molar teeth was described in some cases during the Sheffield outbreak.[8] Our experience, however, has been that physical examination reveals little apart from fever and neck and back stiffness, the latter are often unconvincing.

The peripheral blood white-cell count is usually normal but may be raised, with a normal differential count. Lumbar puncture reveals the CSF under some increased pressure and with a pleocytosis of up to 5,000, though seldom over 500, cells per c.mm. Initially there may be polymorphonuclear predominance, with a mononuclear swing after a few days. Occasionally the initial CSF is normal. We have encountered this only once, but in the Leicester outbreak Rotem reported 27 of her cases as having an initially normal CSF and in 6 of these a second specimen was also normal.[24] The protein content is frequently raised, but seldom over 100 mg.%, and the CSF sugar is normal. Rarely is vomiting severe or protracted enough—as in tuberculous meningitis—to depress the chloride level significantly. Direct smear examination and culture of the CSF and the blood are, of course, negative for bacteria.

The course of the disease is variable. In most cases the symptoms and fever settle rapidly, whereas a few run a course of up to 10 days or so. Lumbar puncture often produces marked symptomatic relief. We have not encountered relapses, but they are not uncommon in epidemics associated with ECHO viruses types 4[11] and 9.[9, 10] Bayer and Gear[1] found in their series of 100 cases that the CSF remained abnormal for 2 weeks in 60%. Our experience has been similar.

Differential Diagnosis

A full discussion of all the conditions in which the aseptic meningitis syndrome may occur cannot be attempted here. Most of the non-viral conditions can be excluded on the history, but confusion commonly and easily arises with bacterial meningitis, especially if the case is seen early. The failure to demonstrate bacteria on direct examination or culture of the CSF cannot, of course, be relied upon, as in some 25% of cases of septic meningitis the organism is not identified. Likewise, in early cases the CSF sugar level is not a reliable indication. It can only be said that, in general, children with aseptic meningitis appear less ill than one would expect a case of septic meningitis of equivalent duration to be. With experience of the condition one becomes more and more courageous, leaving untreated cases with high CSF cell counts which previously one would have had no hesitation in treating as bacterial meningitis. The following case, which presented with a purpuric rash, illustrates this point.

Case 1. S.N., a 6½-month-old male infant, was admitted on 9 November 1958 with a history of fever, vomiting and irritability, associated with a rash on the face, for less than 24 hours. The mother also volunteered that the baby had screamed when the back of the neck was touched. Examination showed the child to be extremely irritable, with a temperature of 101°F, slight neck stiffness, and a fine purpuric rash on the face and neck. The white-cell count was 16,800 per c.mm., with 51% polymorphs, 44% lymphocytes and 5% monocytes. The CSF was opalescent and contained 142 polymorphs and 32 lymphocytes per c.mm., and protein 35 mg.% with no increase of globulin. No specific therapy was given and the child rapidly improved, the temperature being normal after the 3rd day. On 11 November the CSF contained only 29 polymorphs and 12 lymphocytes per c.mm., and 2 weeks later they had fallen to 2 polymorphs and 2 lymphocytes. No virus was isolated from the stool, CSF or blood; complement-fixation tests for toxoplasma, leptospira, herpes, lymphocytic choriomeningitis and mumps were negative.

The aetiology of this case, therefore, remains obscure. Particular interest attaches to the purpura which, in spite of its localized distribution, could have been mistaken for the rash of meningococcaemia. The child, however, was just not ill enough for this condition.

Previous administration of antibiotics is another common cause of confusion, and often precludes an exact diagnosis. Difficulty is also encountered in the early case in which the CSF shows only a few cells, but in which one or two bacteria are reported, although the culture proves sterile. One cannot do otherwise than treat these cases as for bacterial meningitis, but a suspicion often lurks at the back of the mind that the pathologist might have been perhaps over-enthusiastic.

The readiness with which early tuberculous meningitis may be simulated by the benign forms of aseptic meningitis is well illustrated by one of Wallgren's original cases,[3] a child with a history of exposure to tuberculosis, a positive tuberculin test, a suggestive chest X-ray, and a CSF which appeared typical. The meningitis resolved completely and spontaneously in a few days. Since the advent of streptomycin, there must be many children who have been subjected to months and years of painful and potentially dangerous therapy—and perhaps lost their hearing in the process—for nothing more than benign aseptic meningitis in the presence of an arrested tuberculous lesion elsewhere. We have to our knowledge been guilty of initiating such unnecessary treatment in more than one case in which the subsequent too-rapid improvement indicated the true diagnosis and anti-tuberculous drugs were discontinued within a few days of their commencement (see case 3).

Leptospirosis, due to *L. icterohaemorrhagiae*, *L. canicola* or *L. pomona*, may produce only the picture of aseptic meningitis without the other features of jaundice, haemorrhages and nephritis. A biphasic illness, conjunctival injection, and muscular pains, especially in the legs, are features suggestive of this condition. Five such cases caused by *L. canicola* were reported recently from the Witwatersrand.[12]

Rickettsial infection occasionally produces the aseptic meningitis syndrome, as evidenced by the following case:

Case 2. M.M., aged 13 years, was admitted on 5 January 1959 with a history of malaise with a painful lump in the left axilla for 4 days, and fever, headache and vomiting for 2 days. He was febrile (103°F) and there was a possible tick bite on the left chest, with tender left axillary lymphadenopathy. The spleen was easily palpable. Slight neck and back stiffness led to a lumbar puncture being performed, and the CSF was found to contain 1 polymorph and 12 lymphocytes per c.mm., with normal chemistry. Tick-bite fever was diagnosed clinically and the patient was treated with chlortetracycline with prompt response, the temperature remaining normal after the 3rd day. On the day following admission the patient developed the typical rash of tick-bite fever.

Viral Infections

Poliomyelitis is a common cause of aseptic meningitis and, particularly during an epidemic, in a case with no paralysis it may be impossible to exclude it without virological investigations. The following case illustrates to what degree confusion can be caused by this virus:

Case 3. H.H., a 5-month-old patient, was admitted on 22 March 1955. Since being returned from a foster home to her parents' care 4 days previously she had been feverish, irritable and generally unwell, refusing most feeds, and she had vomited twice on the day

of admission. It was possible that she had been ill for considerably longer than 4 days. She was an ill-looking, irritable baby with a temperature of 104°F, a bulging fontanelle, and slight neck stiffness. There was no detectable weakness, and the reflexes were normal. The CSF showed 10 polymorphs and 340 lymphocytes per c.mm., protein 70 mg.% with globulin one plus increased, chlorides 688 mg.%, and sugar 78 mg.%. As she seemed really ill, pending further investigations, she was treated with streptomycin, INH and sulphadimidine. The fever promptly subsided, the temperature remaining normal after the 3rd day. Three days after admission the CSF contained 6 polymorphs and 80 lymphocytes per c.mm., protein 55 mg.% with no increase of globulin, chlorides 751 mg.%, and sugar 83 mg.%. Three days later the cells had fallen to 1 polymorph and 13 lymphocytes. All treatment was stopped, and the babe remained well, with no signs of weakness. Subsequently type-1 poliomyelitis virus was isolated from the stools.

Mumps meningo-encephalitis not uncommonly occurs in the absence of other features such as parotitis and orchitis. The following 3 cases occurred in a family of 6 children, 2 of whom had had uncomplicated parotid mumps a short while previously:

Case 4. C.L., aged 2 years, was admitted on 21 September 1958 with a history of fever for 18 hours and copious vomiting for 12 hours. She had a temperature of 102°F and looked ill. There was a small swelling at the angle of the jaw on the left side which was thought to be an enlarged lymph gland rather than parotid. There was no neck stiffness or other CNS abnormality. The spleen was enlarged, being easily palpable 2 cm. below the costal margin. On the day following admission the CSF showed 25 polymorphs and 75 lymphocytes per c.mm., protein 20 mg.%, no excess of globulin, chlorides 700 mg.%, and sugar 59 mg.%. One week later the CSF showed 415 polymorphs and 145 lymphocytes, with normal chemistry; 17 days after admission there were still 20 polymorphs and 97 lymphocytes per c.mm. Symptomatically, the child was better after 3 days, but the temperature settled only after 12 days.

Case 5. S.L., aged 9 years, sister of case 4, was admitted on 9 October 1958, having developed left parotid mumps 4 days previously, with a history of fever, vomiting and unsteady gait for 1 day. She was afebrile, slightly drowsy and slightly ataxic. She had some residual left parotid swelling and bilateral cervical lymphadenopathy. The spleen was readily palpable. (Splenomegaly is not an uncommon feature of mumps, rarely mentioned in text-books.) The CSF contained 210 polymorphs and 490 lymphocytes per c.mm., protein 45 mg.% with one plus increase of globulin, chlorides 660 mg.%, and sugar 60 mg.%. A week later the cells had decreased to 65 polymorphs and 355 lymphocytes per c.mm., and 2 weeks after admission numbered 3 polymorphs and 40 lymphocytes. The drowsiness and ataxia disappeared after the 2nd day. No virus was isolated, but the complement-fixation test was positive for mumps (+at 1 : 10, ± at 1 : 100).

Case 6. A.L., aged 1 year, brother of cases 4 and 5, was also admitted on 9 October 1958, with a 2-hour history of fever and vomiting. His temperature on admission was 100°F, subsequently rising to 103°F. He was irritable and had some cervical lymphadenopathy, but there was no neck stiffness or other sign of meningitis. The spleen was easily palpable. Because of the family history, lumbar puncture was performed and the CSF was found to contain 1,035 polymorphs and 700 lymphocytes per c.mm., protein 45 mg.% with one plus increase of globulin, and a sugar content of 59 mg.%. He was given no specific treatment and recovered rapidly, the temperature being normal after the 4th day. A week after admission there were still 20 polymorphs and 29 lymphocytes per c.mm. in the CSF. The mumps complement-fixation test proved positive (1 : 10), and to complicate matters a Coxsackie A virus was isolated from the stools.

There is little doubt that case 6, if seen out of the family context, and if diagnosed at all, would have been regarded as an early purulent meningitis and treated—with great success—with powerful antibiotic combinations.

Both herpes simplex and herpes zoster may produce the picture of aseptic meningitis; the following case is probably an example of herpes simplex:

Case 7. G.W., aged 12 years, was admitted on 16 January 1956 with complaints of fever and general body pains for 4 days and nausea, but no vomiting, for 2 days. The positive findings on examination were a temperature of 102°F, fairly extensive herpes on the lips and chin, and doubtful neck stiffness. The CSF contained 17 polymorphs and 265 lymphocytes per c.mm., protein 40 mg.% with a trace of globulin, chlorides 730 mg.%, and sugar 48 mg.%. Symptoms subsided after one day and the temperature was normal after the 3rd day. No virus was isolated from the stools, blood or CSF; complement-fixation tests, unfortunately, were not performed.

The enteroviruses—which include the polioviruses, Coxsackie viruses A and B, and the ECHO (enteric cytopathogenic human orphan) viruses—are with little doubt the commonest cause of the aseptic meningitis syndrome. Coxsackie viruses[13] have been implicated in several epidemics and, in this country, were the most frequently encountered identifiable cause in Bayer and Gear's series of 100 cases (group A isolated 11 times, group B 20 times).[4] The Coxsackie A viruses, of which there are 19 immunological types,[14] besides their aetiological relationship to aseptic meningitis, are the cause of herpangina and acute febrile lymphadenitis; they have been isolated in association with poliovirus, and in some cases of the Guillain-Barré syndrome, and are thought possibly to play a role in the causation of Bell's palsy, 'myositis', and summer diarrhoea.[15] The ECHO virus type 9 is closely related to the Coxsackie A viruses, producing the same changes in suckling mice, though usually only after preliminary isolation in tissue culture.

Coxsackie B viruses have been reported in several epidemics of aseptic meningitis, often in association with Bornholm disease,[14, 16-19] although, strangely, the combination of aseptic meningitis and pleurodynia in the same patient seems to be rare. In Bayer and Gear's series of 100 cases, Coxsackie B virus was the commonest identifiable causative agent, being isolated in the stools of 20 cases and in 9 of these in the CSF as well.[4] Besides causing Bornholm disease and aseptic meningitis, Coxsackie B viruses have been implicated in epidemics of myocarditis neonatorum.[20, 21]

Of the ECHO viruses, types 2, 3, 4, 6, 7, 9, 14 and 16 have been isolated from cases of aseptic meningitis,[22] though types 4, 6 and 9 are most commonly involved in epidemics. These are characterized by a high infectivity rate among a small, often fairly closed, community. Such an outbreak, for example, caused by ECHO virus type 4, occurred in a Johannesburg children's home causing 58 cases among the 121 children.[11] A feature of this outbreak was the high relapse rate—10 cases, one of which relapsed 3 times, and 2 of which relapsed twice—ascribed by the authors to poor antibody production. Relapses have been observed, too, in aseptic meningitis caused by ECHO virus type 9.[9, 10]

An outbreak caused by ECHO virus type 6 produced 24 cases from 16 homes in a small village (Holland, N.Y.) of 500 people.[23] Gastro-intestinal symptoms occurred in 100% of cases, and a few showed depression of reflexes and some muscle weakness, particularly of the neck. In general, however, it is not possible to determine clinically between the various viral causes of the aseptic meningitis syndrome, with the possible exception of the Coxsackie A-like ECHO virus type 9.

There have been numerous reports of recovery of this virus from CSF and stools of cases of aseptic meningitis, occurring usually in localized epidemics.[6-10, 24, 25] The distinguishing feature of these cases is the high incidence of a maculopapular rubelliform rash, involving usually the face and at times

spreading down to the neck, shoulders and trunk. Such a rash has been seen in anything from 18%[24] to 60%[6] of cases. Occasionally it has been petechial. In South Africa 8 cases of aseptic meningitis due to ECHO virus type 9 have been reported;[26] 2 of them occurred in Durban.

Case 8. A.R., aged 5 years, was admitted on 16 January 1956 with a history of headache, fever, vomiting, listlessness and irritability for 2 days, and sore eyes and photophobia on the day of admission. Her temperature on admission was 104°F; there was neck stiffness and positive Kernig's and Brudzinski's signs. The CSF contained 30 polymorphs and 29 lymphocytes per c.mm., and protein 30 mg.%, the remainder of the chemistry being normal. Two days later she was symptom-free and the temperature was normal, and remained so. The CSF on 18 January contained 2 polymorphs and 35 lymphocytes per c.mm.

Case 9. J.R., aged 2½ years, sister of case 8, was admitted on 23 January 1956 with a 1-day history of headache, fever and vomiting, a temperature of 101°F, neck stiffness, and a positive Kernig's sign. The CSF contained 2 polymorphs and 17 lymphocytes per c.mm., with normal chemistry. She improved rapidly after lumbar puncture and her temperature was normal from the 3rd day.

From the CSF of both these cases an ECHO virus type 9 was isolated.

Probably related to 'ECHO 9 disease' is the condition described in infants characterized by fever, irritability, a maculopapular rash on the face, trunk, extensor surface of the limbs and soles of the feet, lasting 3—14 days (petechial in 4 out of 10 cases), superficial lymphadenopathy and faucial reddening, associated with CSF pleocytosis, in which an ECHO virus was isolated from the stools of half the cases.[27]

There appears to be no relationship between the forms of aseptic meningitis discussed in this paper and the several outbreaks of 'myalgic encephalomyelitis' characterized by paresis (without depression of reflexes), sensory changes, mental depression, and often a prolonged, relapsing course.[29, 31] The CSF in these cases is normal and, though a viral infection would seem to be the most likely cause, no aetiological agent has yet been discovered. Such an outbreak occurred in Durban towards the end of a poliomyelitis epidemic and was described by Hill.[32]

Frequency of the Condition

During the 6 years 1953–58, 133 cases of acute meningitis were admitted to the Addington Children's Hospital. Of these, 76 (57%) were of the aseptic variety. In this community of Durban European children, therefore, aseptic meningitis is commoner than all the other forms of meningitis combined. Curiously enough, it apparently is not common in non-European children, and is rarely seen in adults.

SUMMARY

The condition of aseptic meningitis is reviewed, with emphasis on its multiple aetiology. The viral infections producing this syndrome are discussed in some detail, and some illustrative case histories are presented. This is the commonest form of meningitis encountered in European children in Durban.

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WORLD HEALTH ORGANIZATION

Almost 10,000 fellowships have been awarded by the World Health Organization to health workers throughout the world during the past 11 years (1947-1958), according to a study group convened last month at WHO Headquarters in Geneva to evaluate the results and recommend steps to increase the efficacy of this programme.

The grant of fellowships for advanced studies is one of the methods by which WHO helps governments to train technical personnel for their health services. It is part of the wider programme of education and training undertaken by the Organization in cooperation with its 90 member countries.

Under the fellowship programme, doctors, nurses, sanitary engineers, sanitarians, statisticians, nutritionists, public health administrators and other health personnel from 155 countries have been enabled to study in 122 countries and territories other than their own.

In the African Region of WHO, 569 fellowships have been awarded since 1951, when the Regional Office was established at Brazzaville. In a typical year, 60% of the followships were granted to medical officers for training or refresher courses in subjects such as malaria, nutrition, maternal and child health, public health administration, endemo-epidemic diseases, health education of the public, and various aspects of clinical medicine. The remaining 40% was divided among such subjects as nursing, sanitation and entomology.

A HISTORY OF MEDICINE IN SOUTH AFRICA

Mr. A. A. Balkema, publisher of *A History of Medicine in South Africa*, has requested that the *Journal* inform members of the Association that, as the book is being posted in batches to certain areas at a time, there is likely to be some delay before all members receive their copies. Should any member require his copy urgently, he is requested to write direct to Mr. Balkema, Union House, Queen Victoria Street, Cape Town and his copy will be dispatched immediately.

Suid-Afrikaanse Tydskrif vir Geneeskunde : South African Medical Journal

VAN DIE REDAKSIE : EDITORIAL

DIE MEDIESE KONGRES

Die 42ste Mediese Kongres (M.V.S.A.) word gedurende die week 27 September–3 Oktober in Oos-Londen gehou. Voorbereidings vir hierdie Kongres is reeds 'n geruime tyd al aan die gang, en 'n ywerige en onvermoeide Kongreskomitee stel dit hom ten doel om alles so goed en doeltreffend as moontlik te reël. Met die doel om alle belangstellende lede so vroegtydig en volledig moontlik in te lig, is omvattende besonderhede aan elke lid van die Mediese Vereniging gestuur in die vorm van spesiale omsendbriewe, sowel as deur middel van aankondiginge in die *Tydskrif*. Om hierdie informasie min of meer af te rond is die volledige wetenskaplike program van die Kongres in die *Tydskrif* van 25 Julie (**33**, 629) gepubliseer. Die Tak Grens wat as gashere vir die Kongres optree, kan dus die geregverdigde verwagting koester dat lede van die Vereniging self nou ook hul deel sal bydra om die verrigtinge van hierdie Kongres so luisterryk as moontlik te laat verloop.

Sedert die vroegste dae van sy bestaan het die Mediese Vereniging van Suid-Afrika hom dit ten doel gestel om as 'n wetenskaplike en kulturele liggaam op te tree en nie net as 'n soort vakbond vir dokters nie. Om hierdie rede het byeenkomste van individuele lede, van Afdelings, Takke, Nasionale Groepe, en die gereelde algemene Kongresse nog altyd 'n belangrike deel uitgemaak van die aktiwiteite van die Mediese Vereniging.

Daar is egter ook 'n ander rede waarom hierdie aktiwiteite van die Vereniging nog altyd as besonder belangrik beskou is, nl. die behoefte aan volgehoue nagraadse omgang tussen dokters op 'n akademiese en wetenskaplike vlak—'n behoefte wat dwarsoor die wêreld gevoel word omdat alle dokters al hoe meer onder die besef kom van die snelle en omvangryke uitbreiding van die mediese kennis. In die moderne mediese wêreld het gedurige nagraadse studie van die allergrootste belang geword vir sowel die dokter as vir sy pasiënt.

Die probleem van hoe om op die hoogte te bly van die moderne ontwikkeling kan op baie maniere opgelos word; byvoorbeeld deur te lees, deur navorsingswerk te doen, deur te reis, en deur middel van omgang met kollegas op kongresse. Aan navorsingswerk, wat die groot gros van mediese praktisyns betref, is daar baie probleme verbonde—veral probleme van 'n ekonomiese aard en van ontoereikende nagraadse universiteitsfasiliteite. Oorsese reise is 'n luukse wat min dokters kan bekostig. Dié gaping word vir die meeste mediese praktisyns deur leeswerk gevul, en tog is leeswerk alleen nie genoeg nie. Daar bestaan nog altyd die behoefte aan die prikkeling van gedagtewisseling wat veral op kongresse moontlik is.

Dit is dus ongetwyfeld die geval dat die gereelde tweejaarlikse algemene Mediese Kongres 'n heel besondere plek inneem in die professionele lewe van dokters in ons land. By 'n volledige waardebepaling van die betekenis van kongresse soos hierdie, in die besonder, en van die waarde van professionele en maatskaplike omgang met ander lede van die Mediese Vereniging, in die algemeen, is dit egter nodig dat ons verder en dieper moet kyk. Ons moet ook aan onsself die vraag stel of ons as doktersgemeenskap ons regmatige plek inneem in die mediese rade en vergaderinge en organisasies van die wêreld. Omdat ons as mediese liggaam in die Mediese Vereniging gelukkig nog vry staan van interne spanninge en wrywing en tweespalt, soos wat daar ongelukkig op so baie ander gebiede van die gemeenskapslewe bestaan, rus daar op ons die verpligting om die tradisionele broederskap in die geneeskunde soos 'n kosbare kleinood te bewaar. Dit is ons plig om ons eie, besondere professionele en intellektuele tradisie op te bou in hierdie land, maar terselfdertyd moet ons ten alle koste voorkom dat ons geïsoleerd en op ons eie hier voortgaan sonder om ons gedurig te gaan drenk aan die groot wêreldwye stroom van mediese kennis en gebeure. Ons moet ons professionele vereniging deur sy lede en liggame so volledig moontlik inskakel by die aktiwiteite van ander nasionale mediese vereniginge en van die Wêreld Mediese Vereniging. Want dan sal ons ons stem kan laat hoor buite die grense van ons eie wyk en sal ons ook die volste moontlike voordeel put uit die grootste gemeenskaplike bron van kennis en ervaring, sowel vir onsself as vir die pasiënte wat aan ons sorg toevertrou is.

THE MEDICAL CONGRESS

The 42nd Medical Congress of the Medical Association of South Africa will be held in East London from 27 September to 3 October. The Congress represents the continuation of an old and proud tradition, and it is sincerely hoped that this Congress will be as successful as previous Congresses. Full details regarding the arrangements for the Congress have been made available to members of the Association by means of special circular letters distributed by the Organizing Committee and by the publication of announcements in the *Journal*, and, in order to acquaint members in advance of the proceedings at Congress, the complete scientific programme was published in the *Journal* of 25 July (**33**, 629). The Border Branch, who will act as hosts to the Congress, are continuing their work of preparation in the reasonable expectation that members of the Association will add their share in an attempt to ensure the successful culmination of this important event.

Since the early days of its existence it has been the explicit aim of the Medical Association not to be merely a trade union for doctors, but to function as a scientific and cultural body of professional men who are fully aware of the great and important obligation which rests on them—to remain

abreast of the times in professional and scientific, as well as in cultural matters. Consequently, meetings of individual members, Divisions, Branches, Groups, and the organization of general Congresses at regular intervals have always constituted an important part of the activities of the Association.

There is, however, yet another reason why the scientific and academic activities of the Association have always been regarded as eminently important—the need for sustained postgraduate contact between doctors on an academic and scientific level. This need is felt by doctors throughout the world, since all doctors are becoming increasingly aware of the rapid and extensive development of medical knowledge and of the significance of this development.

The problem of keeping in touch with modern advances can be solved in various ways: by reading, by doing research work, by travelling, and by communication with colleagues at congresses. Research work in South Africa should be encouraged at all costs, but it presents many difficulties of which the economic problem and the relative isolation of doctors and communities in this country with its vast expanses are probably the most important. Overseas travel is a luxury that many cannot afford. Reading fills this need for most medical men, and yet reading alone is not sufficient. The stimulus gained from the exchange of views is essential.

There can, therefore, be no doubt that the importance of the regular biennial general Medical Congresses remains beyond question. However, in assessing the true significance of a Congress of this nature and of social and intellectual intercourse between doctors in general, we should ask ourselves whether we, as a community of doctors in this country, are occupying our rightful and proper position in the medical organizations and associations of the world.

As an Association we have so far been fortunate in having been able to escape the discord and tensions that have become so prominent in other walks of public life. It is our duty, therefore, to treasure the traditional fraternity of medical men. We must build up our own intellectual and professional traditions in this country, but at the same time, we must not become isolated from the great international stream of medical thought. Only by cooperating fully with other national medical associations and with the World Medical Association, shall we be able to derive the greatest benefit from the greatest common source of knowledge and experience. It is in our own interest and in the interest of the patients we serve to direct our energies towards the attainment of this goal.

A REVIEW OF SALMONELLOSIS IN SOUTH AFRICA

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Organisms of the salmonella group, which are of world-wide distribution,[1] are encountered as parasitic or disease-producing organisms in most mammals,[1-5] birds,[1-4] reptiles[3,6-10] and fish.[2,11,13,21,40] Some are host specific, e.g. *S. typhi*, *S. paratyphi A*, *B* and *C* and *S. sendai* are found only in man.[12] Others have a certain degree of host specialization,[2] e.g. *S. abortus-ovis* for the sheep, *S. gallinarum* and *S. pullorum* for the fowl, *S. abortus equi* for the horse and *S. dublin* for the ox. Most types, however, appear not to be host specific and it is generally agreed that they are all able to infect man.[1,18]

The organisms may infect man by direct contact,[1,39] but, as indicated by the ill-defined term 'food-poisoning', they are usually conveyed through contaminated food. Lately, house dust[15,16] and lice[17] have also been incriminated as transmitters of infection.

It is convenient to recognize 4 main clinical entities that may occur individually, simultaneously or consecutively in the course of an infection.[18] They are (1) gastro-enteritis, (2) the 'typhoidal or septic syndrome', (3) focal manifestations and (4) the carrier state. In bigger surveys of salmonellosis other than typhoid fever,[18-20] gastro-enteritis was the main symptom in 66-70% of the cases, the typhoidal syndrome in 8-9%, focal manifestations in 7-8% of the infections, and 15% were classified as healthy carriers. The more important localized disorders were meningitis,[2,11,18,19,22-25] endocarditis and pericarditis,[18,26-29] osteomyelitis,[2,18,30,31] pneumonia and pleurisy,[18,19] urinary-tract infections,[18,32] and abscesses.[2,18,19,24,33,34]

The disease does not spare any age-group but is apparently commonest in children.[20,28,40,79] The clinical picture may range from the mildest conditions, which often remain undiagnosed, to the most fulminating forms, terminating fatally. The total mortality in salmonellosis of man, due to types other than *S. typhi*, was 1·4% in one survey of 2,605 cases,[20] and 4·1% in another of 7,779.[18] It may be argued that the groups under observation were overloaded with severe cases, which would tend to increase the mortality. However, 355 deaths among just over 10,000 cases of confirmed salmonellosis are not to be dismissed lightly.

The prognosis depends on the age of the patient, being more serious in the age-groups under 2 and over 50 years.[10,18,20] Moreover, the site of infection, the general resistance of the host, and the infecting salmonella type, are also important factors.[18] Strains such as *S. cholerae suis*, *S. enteritidis*, *S. dublin* and *S. typhi murium* are usually associated with severer symptoms than other types,[18,19] although they may vary from outbreak to outbreak.

In recent years, there has been a definite increase in the incidence of salmonellosis in England and North and South America.[2,11-13,20,35,36] This tendency has been ascribed to large movements of populations,[12] to increased numbers of meals eaten in canteens, restaurants, etc.,[2,19] to the extensive use of bulk prepared food,[2,13,14] to importation of imperfectly sterilized foodstuffs, e.g. dried egg-powder and frozen egg albumin, and to the rising incidence of salmonellosis in animals.[2] The infection rate of domestic animals seems to be associated with the increasing use of contaminated bone meal and fish meal.[21]

In conclusion, the indications are that salmonellosis is on the increase in some parts of the world. The situation has

become further aggravated by the recent description of drug-resistant salmonella types.[37,38]

From South Africa, comparatively little has been published on salmonellosis other than typhoid fever. Outbreaks of food poisoning caused by salmonella infections were reported by Greenfield *et al.*[55] (1936), Buchanan *et al.*[56] (1939), Gear *et al.*[57] (1942), Lewin *et al.*[58] (1945), Le Riche *et al.*[59] (1953) and Neser *et al.*[60] (1957). The number of persons affected ranged from 4 in the smallest outbreak to 175 in the biggest. The organisms incriminated in the outbreaks were *S. bovis morbificans*,[61] *S. typhi murium*, *S. braenderup*, *S. enteritidis*, *S. dublin*, *S. poona* and *S. newport*.

Kahn[63] (1957) and Kahn *et al.*[64] (1958) drew attention to the frequency of salmonellosis as a cause of diarrhoea in Bantu children during the summer. Stein[65] (1955), also working with Bantu children, pointed out that gastro-enteritis caused by salmonellae carried a graver prognosis than that of undetermined aetiology.

Some rarer manifestations of salmonellosis in South Africa were reported by Bennett *et al.*[24] (3 patients with meningitis and 2 with abscesses) and by Utian[25] (1 case of meningitis).

For the treatment of salmonellosis Kahn *et al.*[64] found chloromycetin to be the drug of choice; however, some strains are resistant to all common antibiotics (Stein *et al.*,[38] 1958).

Products associated with the transmission of salmonellosis in South Africa are milk,[58] raw ice,[56] lettuce,[57] gelatine-and-egg pudding,[59] meat dishes[55,57,58,61,66] and the popular dehydrated meat preparation known as biltong.[60]

Salmonellosis is also known to occur in certain animals and birds in this country. It has been found in cattle,[66-68] horses,[67,69-72] sheep,[67] pigs,[67,73] dogs[74] and cats.[74] Henning[67] isolated salmonellae from pigeons, canaries, geese, ducks, turkeys and fowls.

Apart from these reports, the literature contains the description of a number of 'new' salmonella types originally isolated in South Africa.[41-54]

From this survey of the local literature it appears that there are many gaps in our knowledge on the subject. We are ignorant of the prevalence of salmonellosis in man and animal[62] and of the illness and economic losses attributable to these organisms. Furthermore, information on their occurrence in our common foodstuffs is very scanty and we know but little of the relative importance of the various routes of infection.

The purpose of this communication is to record the salmonella types isolated in South Africa before 1958, as well as to focus attention on salmonellosis, which in the future may assume such proportions as to become a matter of considerable concern.

MATERIAL AND METHODS

The information is extracted partly from the records of the Salmonella Typing Unit of the South African Institute for Medical Research (SAIMR) and partly from publications from other laboratories.

The Typing Unit, established in 1952, receives strains isolated from specimens submitted to the SAIMR. To the best of our knowledge, all these specimens were of human origin; some came from acutely ill patients, convalescents and chronic carriers, and others from apparently healthy food-handlers, whose excreta were examined prophylactically. The number of strains exceeds the number of patients because, in several cases, successive specimens from the same patient yielded a growth of different salmonella organisms.

Pure cultures for typing have also been received from other laboratories on the Witwatersrand. Most, if not all, of them were of human origin, but usually without information about the site of infection. In addition, this survey includes strains which were reported from other laboratories in the Union. Such strains, with the exception of *S. pretoria*[46] and *S. amersfoort*,[43] have been isolated from man.

The organisms, classified according to their biochemical behaviour, were identified by detailed antigenic analysis according to Kauffman's recommendation.[75] Slide agglutination technique was the usual procedure, but in doubtful cases it was checked by the tube agglutination method.

The records of the Typing Unit have been scrutinized from 1952 until the end of 1957. *S. typhi* has been omitted from the present survey, because it merits special consideration and will be dealt with in a forthcoming communication.

RESULTS

All salmonella types encountered in the Union of South Africa up to 1958 are listed in Table I, where they are arranged according to the Kauffmann-White schema.[76] A total of 132

TABLE I. SALMONELLA TYPES ISOLATED IN THE UNION OF SOUTH AFRICA BEFORE 1958

Groups and Types	*Source*				1957 *Total*
	Faeces	*Urine*	*Blood and CSF*	*Culture*	
Group A					
S. paratyphi A	8	—	6	15	29
Group B					
S. abortus equi	5	—	—	2	7
S. paratyphi B	6	—	—	—	6
S. wagenia	1	—	—	—	1
S. stanley	1	—	—	—	1
S. duisburg					
S. saint paul					
S. reading					
1941: S. kaapstad	1	—	—	—	1
S. chester	15	—	—	3	18
S. san diego	2	—	—	1	3
S. derby	23	—	2	22	47
S. budapest					
S. typhi murium	57	—	CSF=2	63	122
S. bredeney	—	—	—	1	1
S. heidelberg	—	—	—	1	1
S. stanleyville					
Group C 1					
S. san juan					
S. edinburg					
S. georgia	—	—	—	1	1
S. paratyphi C	1	1	—	—	2
S. cholerae suis					
1937: S. amersfoort					
S. mission	2	—	—	1	3
S. livingstone					
S. braenderup	—	—	—	1	1
S. montevideo	51	1	8	18	78
S. oranienburg	1	—	2	2	5
S. thompson	19	—	2	18	39
S. concord	1	—	—	2	3
S. irumu					
S. colorado					
S. infantis	1	—	—	5	6
S. bareilly	—	—	—	1	1
S. aequatoria	—	—	—	1	1
S. eschweiler					
S. tennessee					
Group C 2					
S. narashino					
S. nagoya					
S. muenchen					
S. manhattan					
S. labadi	72	1	1	34	108
S. newport	12	—	—	19	31
S. kottbus	4	—	—	8	12
S. lindenburg					
S. takoradi					
S. bonariensis	—	—	—	1	1

Groups and Types	Source: Faeces	Urine	Blood and CSF	Culture	1957 Total
S. litchfield					
S. fayed					
1955: S. baragwanath	1	—	1	—	2
1955: S. germiston					
S. bovis morbif	8	—	—	7	15
S. hidalgo					
S. gold coast					
S. tananarive					
S. praha					
S. glostrup					
Group C 3					
S. shipley					
S. virginia					
S. kentucky	2	—	—	—	2
S. amherstiana					
Group D 1					
1941: S. durban					
S. ndolo	—	1	—	—	1
S. eastbourne	7	—	2	6	15
S. israel	—	—	—	1	1
S. enteritidis	—	—	—	1	1
S. pensacola					
S. dublin	5	2	5	10	22
S. seremban					
S. panama					
S. goettingen					
S. victoria					
S. pullorum					
Group D 2					
S. strasbourg	3	—	1	—	4
Group E 1					
S. vejle					
S. muenster					
S. anatum	30	1	1	25	57
S. newlands	—	—	—	1	1
S. meleagridis	—	—	—	1	1
S. london	38	3	—	38	79
1957: S. alexander					
Group E 4					
S. senftenberg					
S. krefeld					
Group F					
S. chandans					
S. chingola	1	—	—	—	1
S. aberdeen	10	—	—	3	13
1941: S. pretoria					
S. tel-hashomer					
Group G 1					
S. ibadan					
S. borbeck					
S. poona	1	—	—	4	5
1956: S. roodepoort					
Group G 2					
S. mishmarhaemek	1	—	—	—	1
S. havana	—	—	—	1	1
1952: S. worcester	—	—	—	2	2
S. nachshomin					
S. cubana					
Group H					
S. florida	1	—	—	—	1
S. albuquerque	1	—	—	1	2
1936: S. onderstepoort					
S. carrau	1	—	—	—	1
S. homosassa					
Group I					
S. hvittingfoss					
S. gamanaria					
S. weston	2	—	—	1	3
S. mobeni					
S. rowbarton					
Group J					
1956: S. hillbrow	—	—	—	1	1
Group K					
S. cerro	3	—	—	2	5
Group L					
S. minnesota	3	—	—	2	5
Group M					
S. kibusi					
S. pomona					
S. umbilo					
Group N					
S. urbana					
S. landau					
S. donna					
Group P					
S. adelaide	75	1	1	63	140
S. alachua	3	—	—	3	6
Group Q					
S. roan	2	—	—	—	2
Group S					
1956: S. springs					
S. rio grande					
1952: S. johannesburg	4	—	—	6	10
S. duval	4	1	—	25	30
1957: S. boksburg					
Group T					
S. waycross	2	—	—	1	3
Group U					
S. uphill					
1957: S. rand					
S. weslaco					
Group X					
1955: S. windhoek					
Group 50					
1957: S. greenside					
Total 132	491	12	34	425	962
Percentage	51·0	1·2	3·5	44·2	

Year attached to a type indicates the date of publication of a strain originally isolated in South Africa.
Classification under 'source' applies to those isolated in 1957.

salmonella types have been identified in the Union (Table I, first column). Of these, 17, indicated by year of description, were originally isolated locally. It is noted that the majority of the types belongs to the somatic groups A-E, with group C as the commonest. In order to ascertain the relative frequency of the types, the total number of identifications of individual types at the SAIMR was tabulated for the calendar year of 1957 (Table I, last column). The types without particulars were identified earlier. During 1957 a total of 962 strains, comprising 59 types, were identified. Some types are rare whereas others, shown in Table II, are commoner. More

TABLE II. RELATIVE FREQUENCY OF THE COMMONER SALMONELLA TYPES DURING 1957

Types	Number	% of total
S. paratyphi A	29	3·0%
S. derby	47	4·9%
S. typhi murium	122	12·8%
S. montevideo	78	8·0%
S. thompson	39	4·1%
S. labadi	108	11·2%
S. newport	31	3·2%
S. dublin	22	2·3%
S. anatum	57	5·9%
S. london	79	8·2%
S. adelaide	140	14·6%
Total: 11	752	78·3%

than 3/4ths of the strains were made up of 11 types. *S. adelaide* was the commonest, followed by *S. typhi murium* and *S. labadi*. These three together constituted more than 33% of the identifications.

As mentioned above, some strains were submitted for identification from laboratories outside the Institute. They are recorded under 'culture' in Table I, and comprised 44·2% of the identifications.

Of 537 strains isolated at the SAIMR, 491 (91·4%) were recovered from faeces, 12 (2·2%) from urine and 34 (6·3%) from blood and cerebrospinal fluid. No particular salmonella type predominated in the few cases of infection of the urinary

system. A variety of organisms was recovered from the blood, *S. montevideo*, *S. paratyphi A* and *S. dublin* being the most frequent. In 1957, *S. typhi murium* was not isolated once from the blood stream, whereas on 2 occasions it was recovered from the cerebrospinal fluid.

The results, given in Table III, show that salmonella infections may be expected to occur throughout the year.

TABLE III. SEASONAL TRENDS IN SALMONELLA RECOVERIES, 1957

Month	*Number of cultures*	*% of total*
January	110	11·4%
February	65	6·8%
March	68	7·1%
April	61	6·3%
May	60	6·2%
June	59	6·1%
July	62	6·4%
August	65	6·8%
September	64	6·7%
October	118	12·3%
November	118	12·3%
December	112	11·7%

From February to September the monthly incidence is steady at 6-7% and from October to January it is equally steady but almost twice as high. There are no signs either of a substantially reduced incidence in mid-winter or of a pronounced peak in late summer.

The trends in incidence of salmonellosis is estimated roughly in Table IV, which gives the number of faecal and urine samples investigated bacteriologically in the SAIMR during 1956 and 1957, as well as the number of recovered

TABLE IV. TRENDS IN INCIDENCE OF SALMONELLOSIS

Year	*Number of investigated faeces and urines*	*Number of recoveries*	*Percentage positive*
1956	18,754	338	1·8%
1957	12,560	503	4·0%

salmonellae. The number of investigations in 1957 has decreased by 33% as compared to 1956, probably owing to the opening of a number of hospital laboratories on the Witwatersrand. Nevertheless, more salmonellae were recovered in 1957 than in the previous year. The increase in the percentage of positive specimens is highly significant (chi-square=140, i.e. the probability of the difference being due to chance is infinitely small). The bacteriological technique has remained almost unchanged; the higher infection rate of specimens therefore suggests an increased morbidity in the population.

DISCUSSION

In some respects the findings of this survey differ from those of most other workers. Firstly, *S. typhi murium*, usually the prevailing type in human pathology,[3,4,11,13,19,20,23,77] was outnumbered by *S. adelaide*. Secondly, two strains, *S. adelaide* and *S. labadi* occurred so frequently, that, on reviewing the situation, one is inclined to think that they have caused outbreaks of epidemic proportions. A similar situation, due to *S. reading*, was recently reported in America.[78] Thirdly, the highly virulent strains *S. paratyphi C* and *S. cholerae suis* appear to be rare in South Africa. Finally, the seasonal variation in salmonellosis has not followed the common pattern characterized by a pronounced peak in late summer.[18,79] In contrast, a steady high level in early summer months followed by a sharp decline in mid-summer has been observed. It is possible that a study over a longer period of time may modify the graph of the seasonal distribution.

In other respects the observations are in close agreement with the findings elsewhere. In particular, evidence of increased salmonella morbidity[20] is also found in South Africa. This raises the problem of the measures to be adopted to prevent the propagation of infection, and following that, to decide if such measures are compatible with a simplification of the sero-typing of the strains.

Savage[2] (1956), reviewing the problem of salmonella food-poisoning in England, suggested a method of reducing the incidence of salmonellosis, as follows:

1. Detailed investigation of all outbreaks to ascertain more accurately the extent of the problem. This includes compulsory notification, which was introduced in England in 1938 and has been in operation in the states of Massachusetts and New York for some time.[18] The advantage and necessity of immediate notification was stressed.
2. Detailed investigation of animal reservoirs of salmonellae, particularly with regard to the extent of the infection and the mode of spread.
3. Reduction of the risk of food infection from human carriers of salmonellae.
4. Improvement of standards of hygiene in establishments preparing and serving food.
5. Hygienic control of bulk food preparations.
6. Steps to reduce risks of salmonella infections from egg products.

These suggestions, designed to combat the salmonellosis in England, are equally applicable in South Africa.

Accurate salmonella typing is an involved and costly procedure, and most laboratories would welcome its simplification. One method would be to identify the somatic antigen only and thus classify the organisms according to group antigen. Table V summarizes our results of salmonella

TABLE V. SALMONELLA TYPES IDENTIFIED DURING 1957. CLASSIFIED BY THEIR SOMATIC ANTIGENS ACCORDING TO KAUFFMANN AND EDWARDS[80]

Group	*Number*	*% of total*
A	29	3·0%
B	208	21·6%
C (C1-C3)	311	32·4%
D (D1, D2)	44	4·6%
E (E1-E4)	138	14·4%
11 (F)	14	1·5%
13 (G1, G2)	9	0·9%
14 (H)	4	0·4%
16 (I)	3	0·3%
17 (J)	1	0·1%
18 (K)	5	0·5%
21 (L)	5	0·5%
35 (P)	146	15·2%
38 (Q)	2	0·2%
40 (S)	40	4·2%
41 (T)	3	0·3%

grouping for 1957, had this method been adopted. 76% of our strains belonged to Groups A-E, which is in marked contrast to the results of Edwards *et al.*[1] and MacCready *et al.*,[20] who found that more than 98% of their strains were in those groups. It appears, therefore, that in South Africa a wider range of somatic antisera would be required for a similar percentage of diagnoses.

Another approach was made by Kauffmann and Edwards,[80] who suggested 'a revised simplified Kauffmann-White schema'. The main advantage is, that related H antigens are combined in antigenic complexes with a special designation. It reduces the number of H sera required, does away with many single-factor sera and permits the worker to determine the approximate antigenic structure of numerous salmonella types.

Naturally, a simplified technique does not give the same amount of information as a detailed analysis; there is no short cut if a complete identification is required.

The choice of a serological technique depends on the laboratory facilities available as well as on the information desired by the doctor in charge and by the epidemiologist.

The doctor's main aim is to establish the nature of the infection, to assess the prognosis, and to estimate the number of bacteriological investigations that will be required during and after convalescence. For practical purposes these requirements could be met by grouping the salmonella organisms. In addition it might be advantageous to type the few strains usually associated with septicaemia and/or high mortality (*S. paratyphi A*, *S. paratyphi B*, *S. cholera suis*, *S. enteritidis* and *S. panama*[18]), as well as *S. typhi murium* and one or two of the locally prevailing strains. Such a system would require a limited number of somatic sera and 8-10 flagellar sera.

The epidemiologist, being concerned with the number of outbreaks, the route of infection, and the tracing of reservoirs in nature, will require nothing less than complete identification. In fact, besides complete antigenic analysis, he may wish to subdivide certain types further according to their bacteriophage sensitivity.

SUMMARY

Recent literature on salmonellosis is reviewed and the current concept of the problem outlined. In scrutinizing the South African literature on the subject, particular attention is drawn to our inadequate knowledge of the distribution of the infection in man and animal in South Africa, as well as to our ignorance of human morbidity and mortality attributable to salmonellosis.

The present study reveals that up to 1958 a total of 132 different salmonella types other than *S. typhi* were encountered in South Africa. In 1957, the 3 commonest strains were *S. adelaide* (14·6%), *S. typhi murium* (12·8%) and *S. labadi* (11·2%). The incidence of salmonellosis was twice as high in summer as in winter, but the seasonal decline in incidence did not coincide with the arrival of the cold weather.

It is particularly noteworthy that the proportion of specimens of faeces and urines yielding a growth of salmonella organisms has increased from 1% in 1956 to 4% in 1957. It is probable that this reflects an increased incidence of salmonellosis in the population.

The introduction of a simplified laboratory method of typing the salmonella organisms is discussed and the opinion expressed that the results of this simplified technique provide an adequate indication for treatment. If, however, notification of salmonellosis is made compulsory, complete identification of the organisms will be essential.

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THE USE OF PH 203 (PANTHESINE HYDERGINE) IN THROMBO-EMBOLIC DISEASES IN OBSTETRICS AND GYNAECOLOGY*

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Thrombophlebitis, phlebothrombosis and pulmonary infarction are amongst the most serious complications following operations and deliveries. Progress in medicine has not succeeded in limiting them.[1-3] Out of the great number of prophylactic and therapeutic methods tried, viz. exercises, early ambulation, elastic bandaging, zinc-lime casts, vein ligation and others, anticoagulants—dicoumarol and heparin—are the most successful. However, the possibility of serious bleeding should always be considered when anticoagulants are used.[4]

The action of dicoumarol has a latent period of 24-96 hours. The fact that it is given orally prevents its use in the immediate post-operative period. The drug is dangerous in patients who have a low albumin blood level or liver damage, as well as in patients suffering from ulcers in the intestinal tract. It presents hazards during and immediately after delivery as well as during and after an operation. It crosses the placental barrier and it is excreted in the milk, thus endangering the foetus and the newborn.[5,6] The action of heparin is of short duration and necessitates frequent determination of clotting time.

These disadvantages do not deter us from using anticoagulant drugs, although they compel constant readiness and necessitate laboratory facilities and rather frequent examination, and the search continues for new and more advantageous drugs in this field.[7-12]

In 1940 Ochsner and De Bakey,[13] from New Orleans, following Leriche and Kunlin,[14] published a report which laid stress on the occurrence of reflex constriction of arterioles and veins in a whole region as a result of a lesion of part of it. This leads to extensive damage to the circulation of the region, resulting in hypoxia and damage to the capillary endothelium. Increased exudation occurs as well as a rise in tissue pressure, resulting in oedema and pain. Leriche[15] believes that novocaine used as a local anaesthetic blocks the painful reflex induced by trauma or vascular diseases and restores the neurovegetative equilibrium. Others[16-19] used novocaine or alcohol with good results, injecting them directly into the sympathetic ganglia or the connective tissue surrounding them to relieve pain in a determined region.

In 1951 Rappert,[9] of Vienna, in acute cases of thrombophlebitis, tried the action of procaine by intravenous drip, combined with hydergine in tablet form or by injection. In the course of experiments procaine was replaced by its derivative, panthesine, which was found as efficient yet less prone to produce unpleasant side-effects such as dizziness, nausea and a fall in blood pressure.

In contrast to anticoagulants, clinical trials with a combination of panthesine and hydergine have shown that they do not affect the coagulation of the blood. Panthesine is a local anaesthetic (p-aminobenzoyl-N-diethyl-leucinol methane sulphonate). It also produces anticholinergic, antihistaminic, spasmolytic and sedative effects. It is less toxic than procaine. Hydergine is a mixture of the methane sulphonates of dihydro-ergocornine, dehydro-ergocristine and dihydro-ergokryptine in equal proportions. Contrary to their natural forms, which constrict blood vessels, the hydrogenated alkoloids relax the arteriolar tonus.[20]

Recently, Hausammann[21] reported good results after prophylactic treatment with PH 203 (panthesine 200 mg. + hydergine 0·3 mg.) of 309 surgical patients, as compared to an untreated control group of 253 cases. Königs[22] published a postpartum case of multiple thrombosis and embolism, in which anticoagulant therapy was unsuccessful but treatment with PH 203 led to rapid improvement and cure. Morger[23] also employed PH 203 as a prophylactic before operation, and reported good results as compared with untreated cases in previous years.

In view of these good reports we have used PH 203 in patients with thrombophlebitis in obstetric and gynaecological practice.

MATERIAL AND METHOD

The number of patients with thrombo-embolic complications treated with PH 203 during the period from 1 November 1956 to 1 March 1958 can be seen from Table I. Besides PH 203, and hydergine in tablet form at the conclusion

TABLE I

	Therapeutic	*Prophylactic*	*Total*
Obstetrics	58	4	62
Gynaecology	18	8	26
	76	12	88

of the treatment, these patients were not given any other therapy than antibiotics where this was considered necessary. In most cases the patients received the usual physical treatment, viz. elevation of the affected limb, wet dressing or elastic bandage. In our department the usual routine is ambulation 24 hours after delivery or operation.

Therapy

We have divided our therapeutic cases into 3 groups, viz.:

1. Light: Superficial thrombophlebitis of the leg, 26 cases.
2. Medium: Deep thrombophlebitis of the leg, 36 cases.
3. Severe: Pulmonary infarction, phlegmasia alba dolens, or deep pelvic thrombophlebitis, 14 cases.

We did not take into consideration temperature and pulse, since these signs may be produced by the primary condition (after delivery or operation). Moreover, most patients received antibiotic therapy, which influenced these signs.

Group 1. Patients belonging to this group received 2 intramuscular injections daily of PH 203 for a period of 3-8 days, followed by one injection of PH 203 plus one injection of 0·3 hydergine for 1-3 days. At the conclusion of the treatment by injections, the patient received 2-3 hydergine sublingual tablets daily at home for 7-10 days.

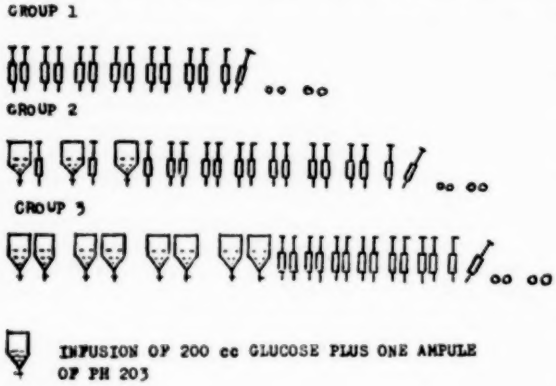
Group 2. Patients showing symptoms of moderate severity received one intravenous infusion of PH 203 plus one intra-

* We are indebted to the Pharmaceutical Laboratories Sandoz, Basle, Switzerland, for placing at our disposal the necessary quantity of PH 203.

muscular injection daily, for 3-5 days. After this, 2 intramuscular injections were given per day till disappearance of signs. Finally, hydergine injections and tablets were administered, as with group 1.

Group 3. Patients with severe thrombosis and embolism received one ampoule of PH 203 as an intravenous infusion twice daily for 3-5 days; then intramuscular injections twice daily till disappearance of all signs. Hydergine injections and tablets were given as with groups 1 and 2.

The following diagram indicates the methods of treatment.



For intravenous infusion PH 203 was diluted in 200 ml. of 5% glucose. The duration of the intravenous drip was 90-120 minutes.

Only 6 patients, all from the first group, did not require complete bed rest; all the other patients were confined to bed for various periods. All were permitted to ambulate before conclusion of the treatment and disappearance of the symptoms.

Table II shows in summary for each group how long it was before the marked improvement took place in the patients' condition, the length of confinement to bed, and the average length of treatment.

TABLE II

Group	*Marked Improvement after (days)*	*Length of Bed Confinement (days)*	*Average Length of Treatment (days)*
Light	1-3	1- 5	5
Medium	1-3	1- 9	8
Severe	2-4	3-13	11·7

In 9 patients (7 of these receiving intravenous drips and 2 receiving intramuscular injections) secondary side-effects appeared. These were: dizziness, feeling of fainting, tinnitus, and feeling of 'pressure' in the head. Drop in blood pressure was not noted. The side-effects lasted for a short period and disappeared on continuation of the treatment. In patients who were receiving intravenous infusion the rate of administration was slowed down when side-effects appeared.

Two patients received intramuscular injections of PH 203 because of thrombosis in one leg; both developed thrombosis in the other leg on the 8th day of treatment. This condition cleared up on continuation of treatment.

Prophylaxis.

The drug was administered prophylactically to 12 women, 8 before gynaecological surgery, and 4 before delivery. All had a history of severe and repeated thrombophlebitis; some of them had had pulmonary infarction as well. These patients received intramuscular injection of PH 203 only—one ampoule twice daily for 3-4 days before the operation or delivery, on the day of operation or delivery and after it for 6-10 days. In none of this small series of 12 cases was the post-operative or postpartum course complicated by thrombo-embolic disease. Side-effects were light and disappeared on continuation of the treatment.

DISCUSSION

An improvement in the local status, as well as in the general condition of the patient, was noted soon after therapy with PH 203 was started. An outstanding feature was disappearance of pain from the affected area. Oedema, tenderness and Homans' sign,* if present, disappeared rapidly. It seems that the drug acts on those arterioles and veins that are not affected by the thrombosis but react by reflex action from affected blood vessels.[24,25] Apparently even the affected section benefits from the circulation in the surrounding tissue and tends towards better and more rapid organization, and even recanalization.[26] Probably the drug has an identical effect on the pulmonary blood vessels.

It is interesting to note that few of our patients needed sedation. As is well known, panthesine has a general analgesic effect like that of procaine. We were rather impressed by the rapidity of pain relief; the pain disappeared in the affected region very soon after the treatment was started.

As regards administration and dosage, we believe that in severe cases one should start with 2 intravenous infusions daily, at least for the first few days. Our experience in prophylactic treatment is limited, but we were much impressed by the 12 patients with a past history of thrombo-embolic disease whose course after prophylactic administration of PH 203 was not complicated by the disease after operation or delivery.

Side-effects were light and disappeared in spite of continuation of the treatment. The therapy, both in thrombophlebitis and pulmonary infarction, and also prophylaxis, appear to be efficacious.

The treatment is easy and convenient. There is no need for laboratory examinations during therapy, and the drug may therefore be used in certain cases on an ambulatory basis.

SUMMARY

1. A survey of therapy with PH 203 in thrombo-embolic diseases following operation or delivery is presented.

2. 76 women, whose primary condition was complicated

* Discomfort behind knee on forced dorsiflexion of foot—a sign of thrombosis in the leg.

by thrombo-embolic disease, were treated, and 12 cases were treated prophylactically.

3. The results obtained were satisfactory.

4. In the course of the therapy no laboratory facilities are required, no danger of bleeding exists, as far as the drug is concerned, and side-effects are rare and mild.

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THE JOURNAL OF DR. MACKRILL

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Lying in the Cory Library for Historical Research in the Rhodes University is a manuscript book, the journal kept by one of the early doctors of the Cape Colony, Joseph Mackrill (1762-1820),[1] who made his mark in his history by the introduction of buchu into medicine in Britain[2] and the introduction of tobacco growing into the Cape.

The book, which has survived the 140 years since the writer's death in a tolerably good condition, is rarely dated, and only on one or two occasions records the happenings of the day. He collected in it a great deal of miscellaneous information, his inclinations being very catholic. The subjects of his writing vary from medical notes to earthquakes, from Indian water mills to the flora of the Cape, and bear witness to the high degree of erudition to be found amongst the Cape's early medical practitioners.

Dr. Mackrill appears to have been a ship's surgeon or a confirmed traveller. He had a distinct leaning towards geography. His descriptions and notes touch upon South America, the USA, South Africa and India; on one occasion he recorded with some precision the exact location of a hitherto uncharted rock.

Whether Dr. Mackrill was a regularly qualified practitioner does not appear from records, but he registered with the Supreme Medical Committee of the Cape and was licensed to practice as a surgeon in 1807. It is highly probable, therefore, that he was trained as a surgeon by apprenticeship either with a surgeon or surgeon-apothecary. Perhaps he attended one of the private schools of anatomy in London, but he is not mentioned anywhere as being M.C.S., or L.S.A., the usual qualifications in those days for persons who had not graduated M.D. of a University.

The first medical note in his diary is entitled, 'For preventing sudden Death from drinking cold water'. 'Twenty drops of Laudanum', he writes, 'repeated every twenty minutes until pain and spasm are releived (*sic*)'. The dose may be increased from 40 to 60 drops repeated as above 'if the Symptoms are very urgent and the Patient adult'.

It is natural to expect that Dr. Mackrill would feature in his armamentarium remedies unknown to the modern practitioner. 'Salep, the dried root of the Orchis', is referred to as being extremely nutritious and 'should always be carried by Ships on long voyages'. 'Sago or Palma Japonica' is mentioned as 'the best food for Children as it never ferments in the Stomach'.

Of the more familiar but now almost defunct broom he says: 'Fulk, the first Earl of Anjou, went in Pilgrimage to Jerusalem where he was soundly scourged with Broom stalks which grow there. He ever after took the surname of Plantagenet or Broomstalk and which descended from Henry 2 to Richard 3d inclusive'.

Still in frequent use is senega, of which he writes, 'Polygala, Milkwort, the Seneka or Rattlesnake Root, is a species much used in Virginia and with great success in the pleurisy'. It seems highly probable that he had come into first-hand contact with the use of senega in the American colonies, a theory supported by many references to this country. Indeed so wide were Mackrill's travels that he could only have been a ship's surgeon.

Mackrill did not accept every suggested remedy. Under 'inflammation of the Eyes' he records 'It is very confidently reported, however extraordinary it may appear, that the Down under the Wings of the Turkey Buzzard, being applied to the Eyes, relieves almost immediately, every Species of Inflammation, whether from Injury or Disease'.

'Rheumatism', he says 'is relieved by a strong Tincture of Poke Berries in Brandy, a Wine Glassfull every night and morning, lb i Berries to a Quart of Brandy.' He seems to have been up to date in making his medicines pleasant and interesting to the taste!

Antimony was in common use in those days, as old prescription books testify, and it is not difficult to guess that many people died as a result of overdosage. Dr. Mackrill wrote: 'The too violent effect of Antimony when it acts by vomit, may be restrained and carried thru the Intestines by means of a little common salt in any small Drink or by a draught of water acidulated with the Acidum Vitroli Dilutum.'

It is revealing to study entries made concerning remedies which are now in daily use. 'Digitalis, by some powerfully recommended', he notes, 'in all inflammatory Diseases particularly—by others regarded as destructive and poisonous and every bad Quality ascribed to it. If perhaps we steer a middle Course, we shall often find it a very salutary Remedy. Dr. Thornton a man of great Eminence on the Mountains of medical Science, has frequently found it the best of all Remedies in the Scarlet Fever. I have great Reason to be of opinion that a long continued use of it in any Disease is attended with fatal consequences—but I will not discard it.'

Practitioners of today will find it strange to read of tea as a medicament. 'Bohea tea', to use the old description, was recommended 'in very strong Infusion and the Leaves also eaten'. 'When there is no visceral Disease occasioning the Dropsy it may succeed by virtue of its diuretic and astringent properties.'

Under the heading 'Nephritic Complaints', camphor dissolved in water and spirits of wine is recommended as 'cer tainly an excellent Remedy'.

In a later jotting he writes: 'Two remarkable symptoms attending pretty uniformly an Inflammation of the Liver are not noticed by any Writer upon the subject; these are an almost indiscribable (*sic*) tingling at the Extremities of the Fingers of the Right hand and numbness of the arm and a coldness of the Pinis (*sic*).'

Snake bite has always been a great source of worry to physicians and before the advent of antivenin all sorts of remedies were tried empirically. 'Olive oil internally and externally applied is perhaps the safest and most effectual of all Remedies; Oil of Vitriol externally to the Bite'—certainly a most drastic remedy.

Mackrill is credited with having introduced buchu into European medicine,[2] but he says very little about it in his notes. 'Bucku (Diosma) used in bruises internally and externally. With the stinking powder of the leaves the Hottentots perfume or stink themselves.'

He certainly seems to have been of an enquiring turn of mind, paying great attention not only to the flora of the countries he visited, but also speculating upon the probable medical uses of the plants he came across. 'Stoebe, bastard Ethiopian Elickrysum (*sic*)—its roots smell strongly of Valerian and are perhaps as

good.' 'Roridula dentata, the fly bush, a Shrub the leaves covered with fine hairs and a tough Gluten, the boors (*sic*) hang it up in their houses and every fly that rests upon it remains to fly no more.'

Wherever Mackrill was educated, he was a botanist of no mean calibre, and never examined a plant without recording its systematic name. One section of his notebook he devoted to the 'Medicinal Plants of the Cape'. In many cases he records the details for the cultivation of particular plants, and in others items of general interest. Thus, of castor oil he says it 'will burn in a Lamp, makes the best Plaister, it may also be used in mixing paints'.

He carefully describes the preparation of aloes as carried out in the Cape and also the production of opium. Of the latter he says, 'This method differs somewhat from the general Cultivation of the Poppy in India and is in use in the Country of Origin'. Probably he refers to either Egypt or Persia, thus indicating that he had travelled in those countries also, although there is no other indication that he had done so. Later in his diary he speculates on the possibility of growing the opium poppy in the American States.

History was also another of the diarist's great interests. Under the heading 'Yellow Fever' he writes: 'The King of Spain gave to the World the Secret of his Physician Dr. La Fuente for curing the yellow fever. He reports a very great number of Cases cured by the Bark without paying attention to Symptoms of any kind. He endeavoured to get down eight or ten ounces of powdered Bark in the Course of 48 hours. The particular effects of this Remedy we have not heard but it seems the grand object was attained by preventing every Symptom that leads to Putrescence. I never can give credit to its sulatory (*sic*) Effect in those Cases when the beginning Symptoms are violently inflammatory, until I have made the Trial.' By 'Bark' I presume he means cinchona, but the story he relates differs from the usually accepted history of the drug.[3]

The diary, which covers 140 pages, was very carefully indexed. Some previous reader in 1888 added notes telling how Dr. Mackrill introduced tobacco growing into the Colony. 'But on the cessation of the war, tobacco was imported at such low rates as completely to swamp the native industry.' The farm at the Boschberg passed into the hands of Dr. Mackrill's foreman Robert Hart, and the good doctor returned to Cape Town, where he died in 1820 of apoplexy.

I am grateful to Mrs. Ewan, Cory Librarian, for finding the Diary; to Dr. van der Riet, University Librarian, and to Mr. Felix Schonland, for permission to publish this note.

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ASSOCIATION OF MEDICAL STUDENTS OF SOUTH AFRICA*

J. H. STRUTHERS, *Chairman, Federal Council, Medical Association of South Africa*

When I received the kind invitation from the President of the Witwatersrand Students Medical Council to open the first Conference of the Association of Medical Students of South Africa, I felt most appreciative of the privilege conferred on me. It reminded me of the occasion many years ago when I attended the first conference of an important student organization. This was in 1921 when I was a medical student at Manchester University in England, and was one of 10 delegates representing the British Universities at the first International Conference of National Student Organizations. The Conference was held in Prague, and M. Maseryk, President of the newly created democracy of Czechoslovakia, entertained us to a state banquet and gave an inspiring address.

When I received the invitation to attend your Conference, a brief memorandum on the history of the movement towards the establishment of a National medical students' association was included. It is now 10 years since the first 'Medical Schools Interfaculty Conference' was held in Johannesburg.

The start was not very auspicious and the original Conference was abortive. However, since then the idea has never really been dropped and, after one or two further false starts and following further experiments, the present Association of Medical Students came into being last year with 4 member faculties. A Constitution was adopted and the first Conference with all the faculties of medicine in South Africa represented, either by delegates or observers is now being held. I feel that you are to be congratulated on your achievement.

Medical History

It might interest you to know that in the 1880s a medical South African Students' Union existed. At that time it was exceptional for a South African student of medicine to enrol elsewhere in Europe than at Edinburgh University. This steady flow of South African students, who were mostly medical, prompted some enterprising students in 1892 to form a South African Students' Union. A club house was purchased and the circular about this read in part:

'Students should mix with others, but also keep in close contact with those of their own country as the best protection against temptations; it minimizes the risk of the inexperienced, coming over from South Africa, from being led astray . . . or practically wasting an academic career.'

Although not restricted, the members of this Union were mostly medical students. According to its original trust deed, if its membership fell below 10, the trustees would wind up the Union and transfer any money to the University of Cape Town. This occurred in 1935.

Medical societies and even journals had existed in Cape Town during the 19th century, notably one in 1830, which engineered a revision of fees. However, the South African Medical Association was first founded in Cape Town in 1883. Following this, medical societies sprang up in the Eastern Province, Kimberley, Natal, Pretoria and Johannesburg, but most of them remained independent, some becoming branches of the British Medical Association.

The first joint Medical Congress was held in 1892 in Kimberley and this was followed by further congresses at intervals. Also a medical journal came into existence after 1903. Despite these unifying influences, it took 40 years to achieve unity and only in 1926 did the Medical Association of South Africa, existing symbiotically with the parent organization, the BMA, achieve unity and stability. In due course the Medical Association of South Africa separated completely from the BMA as an independent Association.

I believe that medical history should hold a real place in the curriculum of a medical school. Sir William Osler, perhaps the greatest medical teacher of all time, Professor of Medicine first at the Johns Hopkins Hospital and then at McGill University and at Oxford University, always stressed the part medical history should play in the training of students.

The medical profession is deeply steeped in ancient tradition. The recent election of Pope John reminds me of the by-laws of the Royal College of Physicians of London. For the election of its President each year, the Fellows assemble on the day after Palm Sunday. There is no formal proposal or nomination. Each Fellow writes down and places in a large silver urn the name of one of the Fellows for whom he votes. In order to ensure that the President shall be 'as required by the Charter of Henry VIII, a prudent person and one skilled in the science and practice of Physic' only Fellows of at least 10 years standing are eligible. If one of the Fellows receives two-thirds of the votes, he is elected; otherwise the names of the two Fellows receiving the highest number of votes are put to the ballot. Except for this last provision, the procedure conforms to the Papal Election. We may question the method or procedure, but it has produced Presidents of becoming dignity and also wise in counsel.

* Address at the opening of the First Conference of the AMSSA, Johannesburg, 10 July 1959.

The Medical Association of South Africa

The Medical Association of South Africa has a truly democratic Constitution and is governed by a Federal Council whose members are elected by the 14 branches every 3 years. The basis of representation is 1 representative for the first 50 members or less in a Branch, and then 1 additional representative for each 100 members or part thereof beyond the first 50. The Chairman is elected by the Council for 3 years and I am only the fifth Chairman to be elected in the 33 years of the existence of Federal Council.

Membership of our Association is the right of any legally qualified medical practitioner normally resident in the area of any Branch of the Association which covers all the Union of South Africa and South West Africa.

The Medical Association of South Africa is a foundation member of the World Medical Association. This body recognizes only those medical associations which can reasonably claim to be the national medical association of their country. There are 55 such national medical associations representing almost all countries other than those behind the 'iron curtain'. The 'Declaration of Geneva' was adopted by the General Assembly of WMA in 1948 and also by the Medical Association of South Africa. It reads as follows:

'*At the Time of being Admitted as Member of the Medical Profession*

'I solemnly pledge myself to consecrate my life to the service of humanity;

'I will give to my teachers the respect and gratitude which is their due;

'I will practise my profession with conscience and dignity;

'The health of my patient will be my first consideration;

'I will respect the secrets which are confided in me;

'I will maintain by all the means in my power, the honour and the noble traditions of the medical profession;

'My colleagues will be my brothers;

'I will not permit considerations of religion, nationality, race, party politics or social standing to intervene between my duty and my patient;

'I will maintain the utmost respect for human life, from the time of conception; even under threat, I will not use my medical knowledge contrary to the laws of humanity;

'I make these promises solemnly, freely and upon my honour.'

Agenda of this Conference

In looking through the Agenda of this Conference, I notice that there are some interesting items and I should like to refer to one or two of them.

Firstly, there is the question of affiliation to the Medical Association of South Africa. I would say to you that we are very happy to know that you have arrived so far in the development of an association of medical students. We should like to give you every help and encouragement, and I feel sure the Medical Association would welcome some formal affiliation.

Another item on your agenda is the Transvaal Hospital Ordinance. Free hospitalization has had a chequered career in the Transvaal and I shall try to show you quite simply what has been the medical profession's point of view.

It all began with terminology. In the ordinance of 1946 hospitalization was defined as accommodation, food and nursing care and also medical treatment. As the ordinance introduced free hospitalization and made this available to everybody in the Province, it meant the Province intended to provide hospital accommodation, food, nursing care and medical treatment free to all who wished it.

Our terminology was different. We said hospitalization meant accommodation, food and nursing care, and this we were agreed could be free. Medical services we defined separately and we said the Provincial authority had no right to provide these services free to all unless they employed the whole profession to provide such services. When the National Health Service was introduced into England, every doctor who wished could be employed by that Service on application.

The Province, however, had no intention of employing the profession as a whole, and so we insisted that patients who were able to pay for their medical services should do so. This principle was finally accepted when a mediator was appointed by the Government, and the Interim Suspension Ordinance of 1948 suspended free medical treatment for all.

In 1958 a new ordinance was introduced which abolished 'free hospitalization' in accordance with our definition and introduced a means test. The Medical Association stated that they considered that the introduction of free hospitalization had been a real social advance, and to withdraw it would be a retrograde step. However, the reason given for its withdrawal was the very high cost.

It is interesting to note that in Canada free hospitalization, according to our definition and excluding medical care, has been introduced in some Canadian States and is spreading. It represents the Government's contribution to higher medical costs.

The question of medical education is the statutory obligation of the South African Medical and Dental Council. The Medical Association has had a standing Committee on Medical Education for some years—a year ago it presented a memorandum to the Medical Council setting forth its views on the question of training in anaesthesia for undergraduates and interns. It is a matter which frequently engages our attention.

Medicine—a lifelong study, will be the theme of the Second World Conference on Medical Education organized and sponsored by the WMA in collaboration with WHO and the International Association of Universities. This conference is to be held in Chicago in September this year and we hope to have a representative there.

Another matter I should like to discuss is the emoluments of interns. The Medical Association has fought for equal payment to all interns irrespective of race or colour. Numerous approaches have been made, interviews sought and letters written and, although we have not yet been successful, the matter has not been finalized. At its last meeting the Medical Council considered the whole question of medical salaries in relation to race and colour and made an approach to the Government. We have since then been cooperating with Medical Council in this matter with a view to further action.

Another matter which has engaged the attention of the Medical Association of South Africa has been medical health and sickness insurance. For the past 12 years we have given every encouragement to medical aid societies; latterly we have welcomed the introduction of medical insurance schemes by insurance companies and we have sponsored a medical insurance plan in the Johannesburg area to give comprehensive insurance. The basic principles which we have laid down as our ideal for all these schemes have been: (1) Free choice of doctor for the patient, and free choice of patient for the doctor; and (2) payment on a 'per service' basis and not on a *per capita* basis.

These principles reflect the relationship in private practice between doctor and patient which we consider to be the desirable pattern and, particularly in the face of the widening field and scope of medical services in addition to rising costs, insurance is the way to achieve this object.

Then there is the problem of 'specialism'. This is a matter which has engaged the attention of the Medical Association quite frequently in recent years, South Africa being one of the few countries having a 'specialist register'. Recently we made a survey and discovered, amongst other things, that in 1939 some 15% of the medical men on the register were specialists. In 1959 we found the number to be 18%, and between these dates it had fluctuated between these two figures.

In view of this finding there should be no conflict between general practitioners and specialists—they each have their own particular tasks, neither can replace the other. There happens to be a wide sphere of activity common to both, but both are essential. In this connection I should like you to consider a medical movement known in Western Europe as 'the medicine of the person'. Two of the leading advocates of this movement are Dr. von Weizsacker, of Germany, and Dr. Tournier, of Switzerland. This new movement in medicine seeks, not to consider the patient only as a 'case' but also as a 'person'; it seeks to understand and treat disease in terms of the patient's life as a 'whole man'. Perhaps it represents a reaction by doctors themselves against the present dangers of over-specialization. This emphasis in medicine of the 'person' is an attempt by doctors to recover the ideal of Hippocrates that medicine should be practised as a healing art rather than as an engineering technique. This movement may therefore be described as a movement to recover a sense of vocation and purpose for a profession that has been in danger of losing its integrity to a false ideal.

The new movement in medicine has developed from the appreciation that patients have a mental and emotional, as well as

a purely physical aspect. It is the recognition of this fact and the recognition of the power of the psyche which led to the pronouncement of Dr. Hans Selye that stress and tension are responsible for about 70% of modern illnesses, and the statement of Dr. Swaim: 'It is becoming increasingly evident that physical health is closely associated with, and often dependent on, spiritual health'.

Specialism has been one of the features of the development of medical practice during the last 50 years. This has resulted in a great increase in our knowledge of the cause and nature of disease and the means of its control and treatment. Specialism has, however, also led to the reversal of the famous dictum that the whole is greater than the sum of the parts. Specialism implies that the sum of the parts is equal to the whole.

The specialist, in fact, does not practise comprehensive medicine. He exercises his skills in some subdivision of the larger framework of medicine. But in the 'medicine of the person' movement, Dr. Paul Tournier considers that the doctor who wishes to treat the patient as a whole must make a personal commitment, and the quality of his personal life and his honesty with himself and his patients, are factors which will greatly influence his success.

I think that I can say that in the medical profession we are very individualistic and independent but that we are also well organized in an Association which will always fight to preserve that independence. Those who are on the threshold of their careers and are training to enter our ranks will have our interested assistance whenever it is desired. To organize an Association and to become affiliated with the professional body can only do good.

WORLD LIST OF INTERNATIONAL MEETINGS

The Editor of this *Journal* feels that readers may be interested to learn of the various international medical meetings scheduled to take place during the next few months. No details are available here, but those meetings which it is felt have a wider appeal and for which details are available will be published in our regular feature *Forthcoming International Medical Conferences*.

World Federation of the Deaf, Wiesbaden, Germany, 18-19 August 1959. Organisations-Büro, Deutscher Gehörlosen Bund, Gabelsbergerstrasse 2, Frankfurt am Main, Germany. Followed by the 5th General Assembly (20-21 August) and the 3rd World Congress of the Deaf (22-26 August).

World Health Organization, Expert Committee on Teacher Preparation for Health Education in Schools, Geneva, 24-29 August 1959. Palais des Nations, Geneva, Switzerland.

International Commission for Optics, 5th Congress, Stockholm, 24-30 August 1959. Prof. E. Ingelstam, Secretary, Stockholm 70, Sweden.

Scientific Council for Africa South of the Sahara, Specialists meeting on the basic psychological structures of African and Madagascar populations, Tananarive, Madagascar, 27 August-3 September 1959. Abbey House, 2-8 Victoria Street, London, S.W. 1.

World Congress of Prophylactic Medicine and Social Hygiene, Bad Aussee, Germany, 29 August-5 September 1959. Dr. A. Rottmann, Secrétaire Général. Congrès International de Médecine Prophylactique et d'Hygiène Sociale, Liechtensteinstrasse 32/4, Vienna 9, Austria.

Second World Congress on Medical Education, Chicago, 30 August-4 September 1959. Dr. Louis H. Bauer, 10 Columbus Circle, New York 19, N.Y.

World Federation for Mental Health, 12th Annual Meeting, Barcelona, 30 August-4 September 1959. Secretary-General, 19 Manchester Street, London, W. 1.

International Symposium on Haematin Enzymes, Canberra, Australia, 31 August-4 September 1959. Dr. A. H. Ennor, John Curtain School of Medical Research, Box 4, G.P.O., Canberra A.C.T., Canberra, Australia.

World Health Organization, Expert Committee on biological standardization, Geneva, 31 August-5 September 1959. Palais des Nations, Geneva, Switzerland.

European Seminar on Sheltered Employment, The Hague, 31 August-8 September 1959. C. D. Moulijn, Keiser Karelweg 100, Amstelveen, Netherlands.

Fourth European Congress of Aviation Medicine, Rome, September 1959. Dr. Aristide Scano, Centro di Studi e Ricerche di Medicina Aeronautica, Rome, Italy.

Eighth International Congress of Comparative Pathology, Munich, September or October 1959. Prof. E. Letterer, Congress President, c/o Institute of Pathology, University of Tübingen, Liebermeisterstrasse 8, Tübingen, Germany.

International Union of Scientific Psychology, Executive Committee Meeting, September 1959. Prof. Otto Klineberg, Department of Psychology, Columbia University, New York 27, N.Y.

Seminar on Rehabilitation of Crippled Children, Mexico, D.F., September 1959. Inter-American Child Institute, Av. 8 de Octubre 2882, Montevideo, Uruguav.

Symposium on Functional Components of Carcinogenesis, Rehovoth, Israel, September 1959. International Union against Cancer, 25 rue d'Ulm, Paris 5e, France.

International Congress of Cancer Cytology, Madrid, September 1959. Mrs. E. L. Maselli, P.O. Box 633, Coral Gables, Florida, USA.

Symposium on the Prevention of Venereal Diseases by Benzathine Penicillin G, Warsaw, early September 1959. Dr. Pierre Durel, 14 rue des Carmes, Paris 5e, France.

World Health Organization, Regional Committee for the Western Pacific, 10th Session, Taipeh, Taiwan, September 1959. Palais des Nations, Geneva, Switzerland.

International Union of the Medical Press, 4th Congress, Cologne, Germany, September 1959. Dr. Stockhausen, Secretary-General, Bundesaertztekammer, Cologne, Germany.

Congress of Sports Medicine, Chicago, 1-2 September 1959. Third Pan American Games Headquarters, 11 West Washington Street, Chicago 2, Illinois.

Fourth European Congress of Allergy, London, 1-4 September 1959. Dr. A. W. Frankland, c/o Wright-Fleming Institute of Microbiology, St. Mary's Hospital, London, W. 2.

First International Congress of Nephrology, Geneva and Evian, 3-5 September 1959. Dr. G. Richet, Secretary-General, Hôpital Necker, 149 rue de Sèvres, Paris 15, France.

Scandinavian Society of Neurosurgery, 14th Annual Meeting, Stockholm, 4-5 September 1959. Docent R. Frykholm, Södersjukhuset, Stockholm, Sweden.

International Atomic Energy Agency, Conference on the uses of large radiation sources, Warsaw, 5-11 September 1959. International Atomic Energy Agency, Kaertnerring, Vienna 1, Austria.

Sixth European Symposium on Poliomyelitis, Munich, 6-9 September 1959. Dr. P. Recht, Secretary-General, European Association against Poliomyelitis, 56 rue Charles-Legrelle, Brussels, Belgium.

International Association of Microbiological Science, 8th International Symposium on food microbiology, Athens, 6-10 September 1959. Prof. G. Penso, Instituto Superiore di Santa, Viale Regina Elena 299, Rome.

World Confederation for Physical Therapy, 3rd Congress, Paris, 6-12 September 1959. C/o Chartered Society of Physiotherapy, Tavistock House (South), Tavistock Square, London, W.C. 1.

European Society of Haematology, 7th Congress, London, 7-12 September 1959. Dr. E. Neumark, Department of Pathology, St. Mary's Hospital, London, W. 2.

World Health Organization, Expert Committee on health statistics, Sub-committee on cancer statistics, Geneva, 7-12 September 1959. Palais des Nations, Geneva, Switzerland.

World Medical Association, 13th General Assembly, Montreal, 7-12 September 1959. Dr. Louis H. Bauer, Secretary-General, 10 Columbus Circle, New York 19, N.Y.

World Health Organization, Regional Committee for Europe, 9th Session, Bucharest, 8-11 September 1959. 8 Scherfigsvej, Copenhagen ø, Denmark.

Second International Congress on Air Pollution, New York, 9-10 September 1959. American Society for Mechanical Engineers, 29 W. 39th St., New York 18, N.Y.

Congress of the German, Swiss and Austrian Societies for Anaesthesia, Düsseldorf, Germany, 9-12 September 1959. Dr. M. Zindler, Medizinische Akademie, Moorenstrasse 5, Düsseldorf, Germany.

Fifteenth International Tuberculosis Conference, Istanbul, 11-18

September 1959. Secretariat, International Union Against Tuberculosis, 15 rue Pomereu, Paris 16,e France.

First International Symposium on Anti-infectious and Anti-mitotic Chemotherapy, Geneva, 12-13 September 1959. Dr. P. Rentchnick, Case Stand 471, Geneva, Switzerland.

International College of Surgeons, 24th Annual Congress, North American Federation, Chicago, 13-17 September 1959. Dr. Max Thorek, Secretary-General, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

International Society of Surgery, 18 Congress, Munich, 13-20 September 1959. Prof. P. Martin, Secretary-General, 141 rue Belliard, Brussels, Belgium.

International Society of Internal Medicine, 6th Congress, Basle, 14-17 September 1959. Prof. H. Ludwig, Bürgerspital, Basle.

International Medical Congress, Sokolov, Czechoslovakia, 14-19 September 1959.

Nineteenth International Postgraduate Medical Course on Diseases of the Stomach, Karlovy Vary, Czechoslovakia, 14-19 September 1959. Czechoslovak Society of Physiotherapy, Albertov 7, Prague II, Czechoslovakia.

World Health Organization, Expert Committee on vector control, Geneva, 14-19 September 1959. Palais des Nations, Geneva, Switzerland.

World Health Organization, Regional Committee for the Eastern Mediterranean, Alexandria, U.A.R., 14-19 September 1959.

World Health Organization, Travelling Seminar on public health administration, Union of Soviet Socialist Republics, 15 September-17 October 1959. Regional Office for Europe, WHO, 8 Scherfigsvej, Copenhagen ø, Denmark.

International Medical Congress (*Heart Complaints*), Balatonfured Hungary, 16-20 September 1959. Organized by the Union of Hungarian Medical Workers, Budapest V, Nador u. 32.

Seminar on Recent Knowledge on the Mechanism of Acquired Immunity in Tuberculosis, Istanbul, 18 September 1959. International Union against Tuberculosis, 15 rue Pomereu, Paris 16e, France.

International Cardiovascular Society, 4th Congress, Munich, 18-20 September 1959. Dr. Henry Haimovici, Secretary-General, 715 Park Avenue, New York 21, N.Y.

International Congress on Rheumatic Diseases and *4th Congress, European League against Rheumatism*, Istanbul, 18-21 September 1959. Prof. Hami Kocas, Medical School, Ankara, Turkey.

Portuguese Society of Obstetrics and Gynaecology, International Meeting, Lisbon, 19-20 September 1959. Dr. Mario Cardia, Rua Anibal Cunha 98, Porto, Portugal.

International Union of Professional Gynaecologists and Obstetricians, 4th Congress, Lisbon, 21-22 September 1959. (See above.)

First Symposium on the Non-gonococcal Forms of Urethritis and Human Trichomoniasis, Montreal, 21-22 September 1959. Dr. Z. Gallai, Secretary, 8580 Esplanade, Montreal 11, Canada.

Fourth International Congress of Embryology, Paris, 21-24 September 1959. Prof. E. Wolff, Laboratoire d'Embryologie Experimentale, 49 bis ave. de la Belle-Gabrielle, Nogent-sur-Marne (Seine), France.

International Union of Railway Medical Services, 8th Congress, Lucerne, Switzerland, 21-24 September 1959. Dr. J. Ortega, Secretary-General, International Union of Railway Medical Services, 13 rue de Chateau-London, Paris 10e, France.

Ciba Foundation Guest Symposium on Mother-Infant Interaction and its relation to Mental Health, London, 21-26 September 1959. (By invitation.) Dr. G. E. W. Wolstenholme, Director, Ciba Foundation, 41 Portland Place, London, W. 1.

World Health Organization, Expert Committee on venereal infections and treponematoses, Geneva, 21-26 September 1959. Palais des Nations, Geneva, Switzerland.

World Health Organization, Regional Committee for Africa, 9th Session, Nairobi, Kenya, 21-26 September 1959. Boîte Postale 6, Brazzaville, Congo Republic.

International Atomic Energy Agency, 3rd General Conference, Vienna, 22 September 1959. International Atomic Energy Agency, Kaertnerring, Vienna I, Austria.

International Meeting of Neurobiologists, Amsterdam, 22-25 September 1959. (By invitation.) Prof. Dr. S. T. Bok, c/o Nederlands Centraal Instituut voor Hersenonderzoek, 59b Mauritskade, Amsterdam.

Society of Comparative Pathology, 9th Conference, Bordeaux, September/October 1959. Dr. Louis Grollet, Secretary-General, Société de Pathologie Comparée, 7 rue Gustave-Nadaud, Paris 16e, France.

Internation Symposium on Vaccination against Tuberculosis with Non-living Vaccines, Florence, 23-25 September 1959. Prof. Guilio Buonomini, Director, Centre for Antitubercular Vaccination, Institute for Hygiene, University, Viale G.B. Morgani 48, Florence, Italy.

International Scientific Film Association, 13th Congress, Oxford and London, 23 September-3 October 1959. John Maddison, Secretary, International Scientific Film Association, 3 Belgrave Square, London, S.W. 1.

Fifth European Dietetic Conference, Ghent, Brussels and Louvaine, 26-29 September 1959. Dr. Delfosse, Secretary-General, 53 rue Baron-le-Castro, Brussels, Belgium.

Fourth International Course on Tomography, Genoa, 28 September-3 October 1959. Prof. Neopolo Macarini, General Secretary, c/o Instituto di Radiologia, Ospedale S. Martino, Genoa, Italy.

World Health Organization, Expert Committee on medical supervision of radiation workers, Geneva, 28 September-3 October 1959. Palais des Nations, Geneva, Switzerland.

World Health Organization, Expert Committee on tuberculosis, Geneva, 28 September-3 October 1959. Palais des Nations, Geneva, Switzerland.

(to be continued)

PHARMACEUTICAL NEWS : FARMASEUTIESE NUUS

MEAD JOHNSON AGENTS

It has been announced in Johannesburg that South African Druggists Ltd. have been appointed distributors for the well-known paediatric products and ethical prescription specialists of Mead Johnson & Co., USA.

Mead's dextri-maltose and other products will be stocked at all branches of South African Druggists Ltd., in the Union of South Africa and Rhodesia.

The Mead Johnson range will be detailed to doctors and institutions by the medical detailing representatives of South African Druggists Ltd., Agency and Sales Promotion Division. Mead's dextri-maltose and olac will continue to be purely professional products and distribution confined to the retail pharmaceutical trade. Revised consumer prices have brought these famous feeding formulas within the reach of every family income bracket.

Several new products of latest Mead Johnson research will be introduced in South Africa.

PASSING EVENTS : IN DIE VERBYGAAN

Dr. Louis F. Freed, F.R.S.S.Af., of Johannesburg, has been invited by Dr. Lucien Sylvestre, President of the Organizing Committee, to attend the First Canadian Symposium on Non-gonococcal Urethritis and Human Trichomoniasis, to be held in Montreal on 21-22 September 1959.

* * *

Dr. Basil Solomon, M.B., Ch.B. (Cape Town), F.F.A.R.C.S. (Eng.), D.A. (Eng.), has recently returned to Durban after spending some years in England and Scandinavia doing postgraduate study in anaesthesia. While in London, Dr. Solomon was a registrar at the Queen Charlotte's Maternity Hospital, the University College Hospital, and the Hospital for Sick Children, Great Ormond Street. He is at present on the staff of the Addington Hospital, Durban.

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Mr. T. B. McMurray, F.R.C.S. (Edin.), who is a member of the Federal Council of the Medical Association and Hon. Registrar of the College of Physicians, Surgeons and Gynaecologists of

South Africa, has left Cape Town for a 3-month overseas visit. Mr. McMurray will visit orthopaedic centres in Britain and the USA and will attend the 2nd World Conference on Medical Education in Chicago (29 August-4 September) as the representative of the Medical Association of South Africa.

* * *

Prof. Frank Forman and his wife *Dr. Golda Selzer* have recently returned to Cape Town after 3 months' study leave. During their visit abroad they visited Israel and studied the work being done there in the field of medicine and virology. After visiting Continental centres they spent some time in the UK where Dr. Selzer worked at the National Institute of Medical Research and Professor Forman visited medical schools and hospitals. Professor Forman was also external examiner for the final-year medical examinations at Queen's University, Belfact, N. Ireland.

* * *

Research Forum, University of Cape Town. A meeting of Research Forum will be held on Tuesday 1 September at 12 noon in the Bennie de Wet Lecture Theatre, A-floor, Groote Schuur Hospital, Observatory, Cape. Dr. H. E. Schendel will speak on 'Studies of amino-acid handling in kwashiorkor with a possible explanation for the increased amino-aciduria', and Dr. J. B. Herman will speak on 'Chlorpropamide (diabinese) and other hypoglycaemic agents in diabetes with special reference to the use of chlorpropamide in secondary tolbutamide failure'. All who are interested are invited to attend this meeting.

* * *

Cape Western Branch (M.A.S.A.). The monthly Branch meeting will be held in the Physiology Lecture Theatre, Medical School, Observatory, Cape, on Friday 28 August at 8.15 p.m. Dr. Vincent Vermooten, of Dallas, Texas, will speak on 'Modern trends in urology'. Refreshments will be served. (Telephone 5-2455.)

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The Cape Town Mother's Clinic, established to advise mothers on family spacing, has issued its annual report for the year ended 31 March 1959. The new cases attending the 8 branches of the clinic numbered 88 Europeans and 955 non-Europeans, and the total attendances comprised 4,384 (466 European and 3,918 non-European). The expenditure during the year amounted to £1,120. The majority of cases seen at the clinics were referred by doctors, hospitals and other health authorities.

* * *

Dr. Wallace M. Levy, M.B., B.Ch. (Rand), D.O., R.C.P. (Lond.), R.C.S. (Eng.), formerly ophthalmic registrar, Johannesburg General Hospital, who has recently returned from postgraduate study at the Institute of Ophthalmology, Moorfields, London, and its hospitals in the City Road and High Holborn, and at various ophthalmic clinics on the Continent, has now joined Dr. L. Staz in his practice as an ophthalmic surgeon at 428 Lister Building, Jeppe Street, Johannesburg. Telephones: Rooms 22-6200, residence 54-2081.

Dr. Wallace M. Levy, M.B., B.Ch. (Rand), D.O., R.C.P. (Lond.), R.C.S. (Eng.), voorheen registrateur in oogheelkunde aan die Algemene Hospitaal, Johannesburg, wat onlangs teruggekeer het van nagraadse studie aan die Instituut van Oogheelkunde, Moorfields, Londen, en die hospitale daaraan verbande te City Road en High Holborn, en aan verskeie kontinentale klinieke van oogheelkunde, praktiseer nou as oogarts in vennootskap met dr. L. Staz te Listergebou 428, Jeppestraat, Johannesburg. Telefone: Spreekkamer 22-6200, woning 54-2081.

NEW PREPARATIONS AND APPLIANCES : NUWE PREPARATE EN TOESTELLE

HYPACOM

Sandoz Ltd., in introducing Hypacom—(PH 203) panthesine and hydergine—for the prevention and treatment of thrombosis and embolism, supply the following information:

Composition: Each ampoule of 4 ml. contains: dihydro-ergocornine methanesulphonate, dihydro-ergocristine methanesulphonate, dihydroergokryptine methanesulphonate ää to 0·3 mg., and 200 mg. of methanesulphonate of N-diethylleucinolester of p-aminobenzoic acid (panthesine®).

Numerous clinical investigations have shown that a combination of panthesine and hydergine, given in the form of an intravenous drip, has a rapid and beneficial action in thrombosis and embolism. Panthesine is a local anaesthetic possessing a stronger, faster and more prolonged action than procaine, together with a lower toxicity. In addition, it has anticholinergic, antihistaminic, spasmolytic, and sedative properties. Hydergine has a pronounced central action, reducing vascular tone, and peripheral adreno-sympathicolytic effects. Hypacom contains panthesine and hydergine in optimal proportions. The ampoule solution can be administered by intramuscular injection, but should be diluted for intravenous drip infusion.

Indications: (1) Prevention and treatment of thrombosis and embolism: Acute thrombophlebitis, phlebothrombosis (also severe thrombosis of the pelvic vessels), pulmonary embolism, and arterial embolism. (2) Acute and subacute pancreatitis (use same dosage as in severe thrombosis). If necessary Hypacom may be given together with anticoagulants.

Advantages: Unlike anticoagulants, Hypacom does not interfere with blood-clotting mechanisms. Even in large doses, it does not reduce the prothrombin level below 40%. Hence it does not predispose to haemorrhage and may be used before, during and after operation or delivery. Preventive or curative treatment with Hypacom in thrombosis and embolism can be initiated without risk of haemorrhage. Its use does not call for time-consuming laboratory tests, as in the case with anticoagulants.

Hypacom should be administered only by intramuscular injection or intravenous drip infusion: it should not be injected intravenously.

RAUTRAX

Squibb Laboratories (Pty.) Ltd., in introducing Rautrax, supply the following information:

Synthesis of a new oral diuretic, flumethiazide, by scientists of the Squibb Institute for Medical Research, has resulted in another step forward in the treatment of hypertensive disease.

Flumethiazide has been combined with whole-root Rauwolfia serpentina and gratifying results were obtained in the treatment of hypertension by various investigators. The combined product is called Rautrax.

Development of flumethiazide, it was reported, represents the culmination of extensive research for an effective oral diuretic (saluretic) which would induce excretion of potassium at a lower rate than other benzothiadiazine diuretics now in use. Potassium depletion may have adverse effects on heart action, particularly in patients with congestive heart failure. It can also cause generalized muscle weakness and a feeling of lassitude, especially in long-term treatment where insidious potassium depletion may occur.

It was found that flumethiazide potentiates the antihypertensive action of Rauwolfia serpentina. The combined product, Rautrax, provides flumethiazide for diuretic and antihypertensive effect, whole-root Rauwolfia serpentina for tranquillizing and antihypertensive action together with supplementary potassium chloride. Rautrax is indicated in all patients with hypertension, particularly when there is less than optimal response to antihypertensive agents used, when greater or smoother reduction of blood pressure is desired, and in the presence of oedema or congestive heart failure. It is particularly recommended for the anxious hypertensive patient.

In a study of 43 ambulatory patients with hypertensive vascular disease, investigators reported a significant decline in blood pressure (20 mm. Hg or more) in 31 patients after 3 or 4 weeks of Rautrax treatment. Twenty of the 43 became normotensive. Patients ranged in age from 34 to 77 years. Conditions included severe, moderate and mild hypertensive disease, with evidence of cardiac damage in 31 patients and renal dysfunction in 26.

Subjective improvement: Authors reported almost complete relief of associated symptoms such as headache, dizziness and blurring of vision, and the absence of serious or even unpleasant side-effects. After periods of up to 4½ months, no tolerance to the antihypertensive action of Rautrax was observed.

In the same study, comparative results obtained with Rautrax, whole-root Rauwolfia alone and reserpine alone, indicated a definite enhancement of the antihypertensive effect of Rauwolfia by the concomitant administration of a diuretic (flumethiazide).

Other studies have confirmed this potentiating effect, per-

mitting lower dosage regimens when Rautrax is used. Similarly, for patients receiving other antihypertensive therapy, reduced dosage upon institution of Rautrax treatment is recommended.

Side-effects reported with Rautrax treatment have been minimal, rarely warranting discontinuation of medication. Neither gout nor hepatic coma, observed with other benzothiadiazine diuretics, has been precipitated by Rautrax therapy to date. Minor gastro-intestinal disturbances and muscle cramping have been noted. Although investigators have observed a few cases of pruritus, neither skin eruptions nor allergic reactions have been reported.

There are no absolute contra-indications to the use of Rautrax. Hypochloraemic alkalosis may occur with or without hypokalaemia. Patients on Rautrax therapy should, therefore, be examined regularly for fluid and/or electrolyte imbalance.

Supply: Rautrax is supplied as capsule-shaped tablets containing 400 mg. flumethiazide; 50 mg. whole-root Rauwolfia serpentina (Raudixin), and 400 mg. potassium chloride; bottles of 25.

Stock is distributed in the Union by Protea Pharmaceuticals Ltd. and has been issued to wholesale and retail pharmacies.

Dosage: 2 to 6 tablets daily in divided doses initially (2 to 4 usually sufficient); adjustable within range of 1 to 6 tablets (1 or 2 usually sufficient).

Note: In patients already on ganglionic blocking agents, veratrum and/or hydralazine, reduce dosage of such agents by at least 50% when adding Rautrax.

BOOK REVIEWS : BOEKBESPREKINGS

SURGERY

Basic Surgery. Edited by Leslie Oliver, M.B., B.S. (Lond.), F.R.C.S. (Eng.), F.A.C.S. Pp. xvi+1360. 680 illustrations, including 4 coloured plates. £6 6s. 0d. net. London: H. K. Lewis & Co. Ltd. 1958.

This book is a multiple-author text-book 'written primarily for undergraduate students by a team of writers with special experience of their subjects'. The contributors are J. G. Bonnin, D. L. B. Farley, G. Flavell, R. S. Murley, L. Oliver, B. H. Page, J. E. Piercey and V. A. J. Swain. It adequately covers general surgery and the recognized surgical specialities in one volume with 1327 pages. The paper and printing are of the best and there are numerous very good photographs and diagrams. The authors have succeeded in producing a book containing a brief factual account of surgery as it is practised today, but one is rather disappointed that so little attempt has been made to enunciate and discuss the principles of surgery, and therein lies the drawback of the book. But it provides a source of practical information for the student and as such deserves a place, with the many other similar ones available for use by the already bewildered undergraduate.

D.J. du P.

AFFECTIONS OF THE ISCHIUM

Injuries and Surgical Diseases of the Ischium. By Henry Milch, M.D. Pp. x+163. 106 figures. $10.50. New York: Paul B. Hoeber, Inc. 1958.

The author states in his preface that he has written this book to focus attention on affections of the ischium which initially simulate lesions of the lumbar spine and hip-joint. He exceeds his self-imposed mandate and describes, *inter alia*, fractures of the ischium and decubitus ulcers. However, apropos of ischial fractures he emphasizes the difference between central dislocation of the hip-joint and ischio-acetabular fractures. Many of the latter fractures have been incorrectly termed central dislocations by other authors.

In discussing the treatment of decubitus ulcers he clearly indicates the importance of complete excision of the ischium, once the ulceration has extended through the bursal floor and has involved the underlying bone. Frequent recurrences in the past have undoubtedly been due to neglect of this concept.

It is a pity that the numerous radiographs in the book have reproduced so poorly. An outstanding exception is the radiograph of an ischial osteoid osteoma on p. 134, fig. 86. At the end of every chapter there is an extensive list of references. It is a useful little book for those who are interested in this particular subject.

M.S.

CLINICAL ENDOCRINOLOGY

Clinical Endocrinology. 2nd edition. By Karl E. Paschkis, M.D., Abraham E. Rakoff, M.D. and Abraham Cantarow, M.D. Pp. xii+941. 274 illustrations, 6 in full colour. $18.00. New York: Paul B. Hoeber Inc. 1958.

A second edition within 4 years of publication testifies to the popularity of this fairly advanced text-book of general endocrinology. There is only one other book I know of which covers just the same field, and more and more people are likely to be buying one or other as the general importance of endocrine disturbances become daily more evident. New advances in thyroid pathology and therapy (e.g. tri-iodothyronine and goitrous cretinism—but not the work on aetiology of Hashimoto's struma)—and adrenal disorders (aldosteronism and the newer synthetic corticosteroids) are included in this edition.

The volume is nicely printed and generally useful, up to date and accurate. It suffers from one enormous drawback—a lack of consideration of work done or presented outside the USA. It is easy enough to find minor criticisms, some of which are largely conditioned by this major one. In this section on the gonads, it is assumed without discussion that LH and FSH are separate hormones in man, and no account is given of the work of the Birmingham school on their estimation. Likewise no mention is made of the Edinburgh work on the separate identification and estimation of the 3 major oestrogens in human urine. No real information is given of the properties or use of the newer synthetic progestins (e.g. enavid). Regarding gonadal dysgenesis, the old inaccurate statement is repeated that cubitus valgus is very common, while it would be nice to see proof that 'osteoporosis' really produced the bent legs shown by the patient on page 439.

Not a single mention is made of 'prediabetes' and it does not appear in the index. If a section on diabetes is included in a book like this, then it really should discuss modern conceptions of this type.

I think all general physicians should own this or a similar book, though they may still have to refer to the library for more up-to-date information quite frequently.

W.P.U.J.

DRUG TOXICITY

A Symposium on the Evaluation of Drug Toxicity. Edited by A. L. Walpole, Ph.D., B.Sc. and A. Spinks, M.A., Ph.D., B.Sc. Pp. xi+138. 58 illustrations. 25s. net. London: J. & A. Churchill Ltd. 1958.

Many workers in various scientific disciplines are responsible for the rapid increase in the number of drugs presented to the clinician. One of their many problems is that the drugs should be as safe as possible in their therapeutic use. The toxic effects of drugs are predictable (overdose) but as far as the unpredictable reactions (allergy) are concerned much work needs to be done. It may have to be concluded that the latter hazards are part of the price we pay for therapeutic progress. The lines of investigation regarding drug toxicity are well discussed in this book. It is pointed out that controlled studies of allergic reactions have not been made in man; the production of drug allergies in animals may help to solve the problem, although so far the few published claims of experimental drug allergy in animals remain unconfirmed. Another line of investigation is the possibility of differences in metabolic pathways between allergic and non-allergic individuals. This volume will be of great value to all investigators of drug action in the laboratory and clinic and in industry.

N.S.

LEUKAEMIA

Leukemia. By William Dameshek, M.D. and Frederick Gunz, M.D., Ph.D. Pp. xi+420. 142 figures. $15.75. New York and London: Grune & Stratton, Inc. 1958. Obtainable in South Africa through Westdene Products Ltd., P.O. Box 7710, 23 Essanby House, Jeppe Street, Johannesburg.

Leukaemia remains a very common disease and many thousands of articles have been written about it. The paucity of books on the subject is therefore truly amazing. For this reason alone this volume is bound to receive a warm welcome. It can be compared in its scope with Forkner's monograph, which for so many years has been the best single reference source. In this book the authors speak from their own wide experience of the disease, both of the literature and of clinical cases, and are thus able to make clear and authoritative statements.

The book follows conventional lines and most of the varieties of human leukaemia are fully discussed. The problems of the prevalence (is it increasing?) and the aetiology (is it a virus, or an 'enzyme deletion', or a malignant neoplasm, or what?) are squarely faced; so is the problem of treatment (could it ever be cured?).

Of special interest are the chapters on the myeloproliferative syndromes. Most haematologists would agree with the authors' concept of the chronic varieties but might still be reluctant to include what they call the acute myeloproliferative disorders in the same broad category. But all would agree that the authors argue their case fairly and with conviction. Messrs. Grune and Stratton, too, have produced the book with their customary skill, and all in all both the authors and the publishers can be proud of this volume. It is heartily recommended.

C.M.

CORRESPONDENCE : BRIEWERUBRIEK

DIRECT ARTERIAL SURGERY

To the Editor: I should like to refer to an article by Mr. L. Blumberg and myself on 'Experiences in Direct Arterial Surgery at Groote Schuur Hospital'[1] which was published in the *Journal* of 11 July.

In this article the impression is given that thrombendarterectomy is not a useful procedure and it is stated that we regard the bypass as the operation of choice for arterial occlusion. In the light of further experiences in this type of work we have had to alter our views on this subject. A considerable number of endarterectomies have now been done for aorto-iliac occlusions with most promising results and we now feel that the procedure has a very definite place in the treatment of arterial occlusion, particularly if it is limited to the more proximal larger vessels.

There are a number of other controversial points in this article and we have therefore decided to submit a further paper on the same subject to the *Journal* in the near future.

University of Cape Town
Medical School
Observatory, Cape
10 August 1959

J. H. Louw
Professor of Surgery

1 Louw, J. H. and Blumberg, L., (1959): S. Afr. Med. J., 33, 576.

RECENT ADVANCES AND NEWER CONCEPTS IN THYROID DISEASE

To the Editor: Dr. Weinbren interested me very much in his most thoughtful letter[1] in the *Journal*, 18 July, in which he commented on Dr. Hoffenberg's article[2] for general practitioners published on 20 June. I have great respect for his immense experience in radiotherapy and in radio-iodine therapy in such a large number of patients. As a physician, however, my viewpoint is perhaps somewhat different.

Owing to the extraordinarily anomalous legal situation in this country, physicians and even endocrinologists or thyroidologists (pardon the term) who are, it must be plainly conceded, the people most qualified to diagnose difficult cases of thyrotoxicosis clinically, and to decide upon the best line of therapy, are precluded from ordering radio-active iodine. Consequently, with all the goodwill in the world, it becomes extremely difficult to accept, without any reserve, certain *clinical* statements on large numbers of patients from a radiotherapist, however eminent. For instance in the letter referred to above, it is stated that 105 of 325 cases had exophthalmos. Now this is hard to believe. Exophthalmos is certainly frequently diagnosed when it is not present, and in fact it is a distinctly unusual phenomenon in thyrotoxicosis, being mimicked by lid retraction with wide palpebral fissure (plus stare)—the common finding in this disease. However, I am willing to be convinced of this unlikely 30% incidence of exophthalmos with nearly 100% improvement after iodine therapy, *if* progressive exophthalmometer readings are recorded. In fact, if Dr. Weinbren can substantiate his claim, he has a unique series. As a corollary I must point out that I would never claim an improvement in exophthalmos without actual measurements.

Next, I must state that, rather than being lulled into feelings of security regarding 131-iodine tests and therapy in young people, I am becoming increasingly alarmed at the potentialities of the summation of radiation effects in childhood. I do not wish to enter into the literature in this regard, easy though it would be to quote authorities on both sides. If my child had thyrotoxicosis, 131-iodine would certainly not be given, however useful it might appear on other grounds.

I do not inveigh against 131-iodine—we use it more and more, but only after the prolonged consideration of a team which includes endocrinologists, surgeons and radiotherapists in harmonious combination—and, please, the physician must keep the guiding hand.

W. P. U. Jackson

Department of Medicine
Groote Schuur Hospital
Observatory, Cape
5 August 1959

1. Correspondence (1959): S. Afr. Med. J., 33, 611.
2. Hoffenberg, R. (1959): *Ibid.*, 33, 509.

TYPHOID FEVER

To the Editor: In reference to the article by Drs. Ackermann, Rabkin and Cavvadas,[1] I should like to add the following views:

1. Possibly 50% of sporadic typhoid cases are initially misdiagnosed as 'acute bronchitis' and given penicillin. A marked antagonism between the two antibiotics is then seen and the response to chloromycetin in even larger doses than usual is poor.
2. Many uncomplicated adult cases respond to 2 g. or less of chloromycetin daily; other cases may require 4 times this dose initially. The dosage should be tailed off over 10 to 14 days' normality and the schedule must be entirely individual.
3. The use of chloromycetin has *increased* the relapse rate by interfering with antibody production; it is *bacteriostatic*—not bactericidal, and recovery depends on the host's immune reactions. It is common practice to give TAB in small doses for the first 10 days to stimulate these processes.
4. Vitamin-B complex and Vitamin C must be given in high doses.
5. The response of seriously ill patients to intravenous protein hydrolysate is consistently gratifying; this should be regarded as an essential supplement, since catabolism exceeds anabolism in sustained high fever.
6. The use of steroids is standard in the USA and elsewhere. Excellent results, shortening the febrile period from an average 84 to some 15 hours, are consistent. When withheld until late the response is most disappointing.

The occasional catastrophe is seen in this condition; every case should be given the benefit of the most comprehensive treatment.

It is submitted that Professor Turner's[2] definition of 'population at special risk' applies to rather more than 75% of the population of South Africa. In such a community comprehensive vaccination has halved the incidence of the disease; the value of the procedure in conferring a mass partial immunity is inescapable.

Coalbrook South Colliery
P.O. Coalbrook, O.F.S.
4 August 1959

R. G. Drummond

1. Ackerman, H. R., Rabkin, R. and Cavvadas, A. (1959): S. Afr. Med. J., 33, 637.
2. Turner, R. (1959): *Ibid.*, 33, 639.